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Original Articles.

INJURIES TO THE CRUCIAL LIGAMENTS AND AVULSION OF THE TIBIAL SPINE.*

BY CHARLES F. PAINTER, M.D., BOSTON.

I should hardly have had the temerity to bring up the subject announced as the title of this paper merely for the sake of recording four hitherto unreported instances of these lesions, were it not a fact that they are now the not infrequent subject of operative interference because the knee-joint is no longer a *terra incognita* to the operating surgeon. I have been reminded as I have been thinking of this matter that the surgical technique making possible any attempt to deal with these lesions, where necessary by operative methods, has had its origin and development within the span of years during which I have been in practice.

From the latter part of 1894 to the early part of 1896, I was a surgical interne at the Massachusetts General Hospital. During the entire sixteen months of my service, I remember only three or four arthrotomies of the knee performed for non-septic or non-toxic conditions; i.e., clean joint surgery. Three of these were for "joint mice" and one for semilunar cartilage disloca-

tion. Surgeons who were getting quite bold and confident of success in practicing aseptic surgery within the abdominal cavity were very much afraid of the knee joint. The pall of a then recent operative catastrophe hung heavily over surgical practice so far as the knee-joint was concerned. One of the country's foremost surgeons had not long before operated upon a prominent steel magnate of Cleveland, who came on to New York to secure the benefit of his skill in removing a torn semilunar. The wound became infected, and in order to save life a thigh amputation was performed. It was some time before this experience was forgotten because of the prominence of the principals. I recall that my visiting surgeon would, during my period of senior internship, take no chances in opening a knee-joint for a "floating cartilage." If it could be felt easily through the skin and was always readily coaxed from its hiding place, he was willing to cut down upon one when he was able to grasp it between his fingers through the skin, but he could not be persuaded to open the joint before isolating the "mouse" in this way.

Another, with his customary resourcefulness, at about this same time, used a sterilized hat pin with which to transfix the "mouse" after it had been located and before opening the capsule of the joint. It was then easy enough to cut down upon the slippery fragment without fear of its beating a hasty retreat during the process of dissection. This attitude was fairly

*Read before the Boston Orthopaedic Club, April 21, 1922.

representative of that of the entire surgical profession of Boston in 1896.

During the next 13 years, the first three of which I presume it is fair to assume that there was not much, if any, knee-joint surgery being done upon the service, I was helping to develop an adult orthopedic clinic. I think that the report I made in 1910, in conjunction with a colleague, of the results of 204 arthrotomies performed on my service, must have been largely confined to the decade from 1900 to 1910. All cases of arthrotomy were included and the mortality was gratifyingly low, for among that number were a few joints seriously infected before entrance to the hospital wards. It would therefore appear that between 1899 and 1910 a very considerable advance had been made in the technique of knee-joint surgery, an advance which had paved the way leading up to the present attitude of operators who hesitate no more than does the abdominal surgeon to explore, sometimes merely for the sake of satisfying curiosity, and not at all, when there appears some definite pathologic or abnormal anatomic problem to be solved.

This particular group of cases is of course concerned only with abnormal anatomic situations, and this fact makes it desirable to consider what the normal anatomy of the structures involved really is.

We are not, I am sure, sufficiently impressed with the extraordinary stability of the knee-joint mechanism and with the way in which that stability is secured. When one considers the numerous functions to be performed, the power that must be transmitted with the leg in all sorts of positions and under all sorts of strains and stresses, during any and all of which the joint motion must not be blocked or interfered with in any way, together with the extremely slender character of many of the structures by which great resistance must be offered and force applied, we are compelled to marvel at the perfection of design and extraordinary effectiveness of the machine. It is the nicety of adjustment of enveloping capsule and interlocking interarticular ligaments to a mathematically accurate adaptation of the curved articulating cartilages of femoral and tibial surfaces which lays the foundation for this remarkable stability in nearly all positions of the lower leg with reference to the thigh. All this would be of no avail were not the fibrous capsule of the joint made up of the terminal expansions of the powerful thigh muscles, whose actions are so co-ordinated in effecting the two motions of which the knee-joint is capable that the capsule is made taut by the synchronous contraction of these various muscles to just the right extent and at just the right time throughout the full range of motion, from complete extension through to full flexion. It is therefore the fibrous capsule with its various muscular reinforcements, the semilunar cartilages, the

crucial ligaments, and perhaps more than all else the accurate curving of the femoral condyles, by virtue of which they are compelled to maintain such relations to the shallow cup represented by the tibial articular cartilage, that, given a normal muscular co-ordination and tone, the relation of tibia to femur is always that of greatest stability no matter what the angulation at the knee may be; all these factors enter into the stabilization of the knee-joint.

There are really only two situations under which this stabilization may be disrupted. In the first place by violence, of such a nature as to crush down all anatomical structures and, second, a momentary lapse in the synchronous protective activity of the supporting musculature. I will not weary you with a narration of the descriptive anatomy of the knee-joint. It is probably familiar to you all, and if not has necessarily often to be reviewed. I shall content myself with this attempt to give the above composite picture of the results of the normal functioning of these opposed anatomic factors.

Before discussing the subject from the standpoint of the reported cases in the literature, I will give a brief account of my own personal experience with the conditions alluded to in the title.

CASE I. The first patient in whom I recognized a crucial ligament rupture was a medico-legal case which I saw eight years ago. The patient was a young man of 30 who dropped six stories in an elevator. The automatic safety device brought the car to a sudden stop after a six-story drop. There was a capacity load in the car, all of whom were thrown toward the top of the car, which many of them struck, and the patient was buried under several men, his legs being flexed and the lower leg firmly wedged, at the same time that his body was bent over laterally. Everything seemed to be torn apart in his knee; he suffered excruciating pain, could not walk, and there was a rapid accumulation of fluid in the joint. He was taken care of by his local doctor after receiving "first aid" at the Haymarket Square Hospital.

When I saw him some three months after the accident he was still unable to walk with any comfort, and the leg was very unstable. He used a crutch in walking. On examination the leg could not be completely extended and there was hypermobility in two directions. The tibia could be pushed forward upon the femoral condyles and there was more abduction than seemed reasonable, even when it was impossible to completely extend. There was no thickening about the head of the tibia or capsular infiltration. The atrophy was not notable and there were no indications of any inflammatory disturbance. A "cage" splint was applied, with which he found the stability of the joint was greatly increased. He was able to give up his crutch, and in the course of about a year he was nearly

normal as to the function of the knee, though he tired easily.

In this case it would seem that the anterior crucial and the internal lateral ligament was torn. The last time I saw him, more than a year after the accident, there was still a little hypermobility, especially in abduction, and at the same time extension was complete.

CASE II. This case was another crucial ligament tear. The patient was an aviator, 39 years of age. He had met with no serious injury until after the armistice, when he fell out of a window on the first floor of the Barracks at Pensacola, striking heavily on his side with his flexed leg beneath him. He was a tall, powerfully built man, weighing around 180 lbs. There was great pain, complete disability and a large effusion in the joint. He was taken care of immediately at the Naval Hospital there and various treatments were tried, all of which failed to give him a usable leg after nearly two years of treatment. He was admitted to the Naval Hospital in Chelsea, where I saw him. He was walking with a cane, having considerable limp, but not much pain unless he used the leg too much. He was entirely disqualified for duty and was seeking retirement.

On examination the leg was capable of full extension and about twenty degrees short of a right angle in flexion. Anterior displacement of the tibia upon the femur was possible with some slight abduction, even with the leg in full extension. The anterior crucial was the ligament damaged and in this case little harm had been done to the lateral ligament. As the Government was unwilling to retire him until everything had been done that seemed reasonable, I decided to try to repair the torn crucial.

The joint was opened through the median-patellar incision and it was plainly apparent that the anterior crucial had been torn across leaving a very short stump high up in the intercondylar notch, while the longer portion was attached to the tibial spine. The ends were frayed out and one was impressed with the fragile character of the ligaments themselves. Even the posterior, which was not torn at all, seemed singularly inadequate to withstand the strain to which it would seem it must be frequently subject. It was with considerable difficulty, on account of the shortness of the portion of the ligament attached within the intercondylar notch, that silk sutures were passed through the ligament at each of its torn ends. It was not possible to accurately approximate these ends so that the suture had to be regarded as a trellis across which the connective tissue might grow. The wound was closed in the usual manner; kangaroo tendon sutures were passed through the patella, a step which is often omitted as the approximation is usually sufficiently good. His convalescence was uneventful. He was not permitted to have any motion tried, even

passively, for six weeks, and then very gently. It was fully four months before he bore weight on the leg without support other than that afforded by a "cage" splint. At that time he had about right angle flexion, full extension and a fairly stable joint. Since his discharge from the Naval Hospital, which has been followed by his retirement from the service, I have not seen him, but he reports himself as having a serviceable leg.

The length of time which elapsed between the injury and the suture of the ligament is the matter of chief significance in this case, together with the fact that the sutures could not be drawn tight enough to pull the ends of the ligament in contact and yet the procedure converted his condition from one of incapacity so far as any use of the leg was concerned to one of comparative usefulness and activity.

CASE III. Mrs. B., a working woman of 45 years, stepped backward off a porch, a distance of about 3 feet, with a basket of wet clothes in her hands, which she was about to hang upon a line. For a few seconds during the maneuver one foot was on the porch and the other on the ground. As the position was not a dignified one long to maintain, she toppled over to one side, down an embankment, with the result that she was picked up and carried into her house in great pain, referred to the right knee and a rapidly developing effusion. She was kept in bed with ice bags and pillow splint for about two weeks, at the end of which time I saw her, and it was then possible to handle the leg in such manner as to come to some conclusion as to what might have happened within the joint. There was considerable effusion; the leg was in a slightly flexed position and could not be fully extended. There was great tenderness over the joint, particularly about the internal aspect, and attempts to secure motion were very painful. It was possible to slide the tibia forward on the femur and to slip it more posteriorly than it was held, though this last was not noted until she was anaesthetized for operation. There was no possible abduction of the leg upon the thigh. The joint was opened through the median-patellar incision. A moderate, blood-tinged effusion was found in the joint and the crucials were both torn. The anterior was frayed out, but the ends were not widely separated. The posterior was not torn all the way through; a thin band seemed to establish a bridge between the main portions. These were both sutured as well as I could, somewhat handicapped as I was by lack of needles of a proper curve. It was the first case of the kind I had ever operated and was done as a sort of an emergency while I was away from home and on a vacation, and I felt it was an unpromising one in every way. Though I was sure I had placed the sutures through the structures that I wished to hold together, I could not see how they were

likely to hold or furnish a basis for anything to develop that would hold. I did not see her for a year. She had been four or five months getting her motion back, but when I saw her she was doing her housework and had no antero-posterior instability of the knee, though she was limited in flexion to a right angle and was a trifle short of complete extension. She was a very heavy woman, and I presume the after-treatment was not pushed very hard by the patient herself.

The feeling of dissatisfaction which I had entertained over the operation when it was completed and the fairly satisfactory functional result which was obtained led me to wonder whether injuries of that sort would not take care of themselves pretty well, any way, for I was, and am still, loath to ascribe the present (3 yrs. postoperative) very satisfactory condition to anything I did at the time of operation.

CASE IV. During the month of December, 1920, I was called to see a young woman who had been injured in a coasting accident at Wellesley. Her right leg was resting upon the side rail of a double runner in a flexed position. The toes of that foot came in contact, in the rapid progress of the "runner" down a hill, with some solid object with sufficient force to violently abduct the leg on the thigh and hurl her and the two companions who were behind her off the "runner" and roll them some distance over the snow. She could not pick herself up and was carried to the College Infirmary, where I saw her the morning after the accident. There was great pain in the knee, with moderate effusion. The leg was flexed to about 30 degrees and was so sensitive that it was impossible to make a satisfactory examination. A radiogram showed that there was a line of fracture at the base of the spine of the tibia and that the whole process was lifted somewhat away from its base. This condition was evident in both views. An other examination was then given her and no lateral or antero-posterior hypermobility was present, but the leg could not be readily extended. However, with the exercise of gentle pressure in extension full motion in the direction was secured and the leg was put in a cast. Subsequent x-ray examination showed the avulsed tubercle in a better position than at the time of the first observation. The cast was continued for about 5 weeks and then passive manipulation and attempts to regain motion were commenced. She is now in possession of full use of the leg and makes no complaint about it except that when very long on it she finds she tires more easily in that than she does in the other leg. This was a case of uncomplicated fracture or avulsion of the spine of the tibia without any injury to the crucials or the lateral ligaments. It indicates clearly enough that certainly, in those cases where there are no condylar fractures, merely an avulsion of the spine from its base, no open operation is

necessary. Pegging this down with some sort of a bone peg would have been a wholly unnecessary and unjustifiable procedure.

A considerable amount of experimental work has been undertaken in an endeavor to understand the manner in which these crucial tears and tibial avulsions take place. It would appear that they must be more or less clearly connected and that whether the one or the other takes place must depend upon whether the bone or the crucial ligament was the stronger or, what is more probably true, upon some circumstance whereby the one or the other was better guarded against the violence inflicted. Experimentation on the cadaver in an attempt to solve a problem of this kind makes no appeal to me, for in life there are both positive and negative factors entering into the production of traumatic lesions which could never be staged after death had ensued and rigor mortis set it and are, indeed, very infrequently staged during life. They should perhaps be given for what they are worth but this appears to me to be a very poor sort of evidence upon which to build up a theory.

Dittle, who had a case of crucial ligament tear lost the patient after amputation of the thigh. In addition to the injury to the crucials there was also a fracture through the spine of the tibia. The nature of the injury causing these lesions was known in this case and so, after the death of the patient, he undertook to reproduce the same injury in the other leg by repeating the trauma in the same manner as in the first instance, viz., with the leg in flexion and forced abduction. From all the reports of attempts at experimental production of crucial rupture it would appear that the outer defense of the crucials and the tibial spines is the internal lateral ligament and its muscular reinforcements. If this is seriously torn or sufficiently badly stretched, so as to permit of the procurement of a laxity leading to over-tension upon the crucials, we may find anything, ranging from a complete tear, to a partial rupture or merely a severe stretching, if the ligament is weaker than the bone or the application of the force has been in such a fashion as to provoke the tearing of the ligaments rather than a fracture of the tibial spine. The possibilities of over-stretching of the structures which make the knee-joint stable are familiar enough to those who have observed the effects produced upon some knees in the course of the treatment of hip disease with traction splints. It is evident that all ligamentous structures may be stretched if the force is applied gradually enough under the proper conditions. Again when the internal lateral ligament is torn in its deeper fibers and, as occasionally happens in these cases, thin plates of bone are pulled away from the internal femoral condyle when this ligament is stronger than the bone, then the possibility of abduction of the leg, when in full flexion, permits of the develop-

ment of rotation of the tibia to an extent which threatens the integrity of the crucials.

Interesting as speculations in respect to how these injuries are actually brought about may be, it is after all an academic question. Exact knowledge as to how it was done would not lead to the diminishing of even the number of instances of the accident. Therefore the interest in this partial review of the reported cases centers largely upon the methods of treatment employed by various observers and more particularly upon the outcome of these treatments. The earliest reported case is the one described by Godlee in 1888 which was a museum specimen procured from a patient whose leg was amputated by Erickson in 1873.

The following résumé of the literature is chronological.

MAYO ROBSON, *Ann. Surg.*, 1903, Vol. 37, p. 716.

(Paper read at Clin. Soc. Lond., Dec., 1902.)

A 41-year-old miner was crushed under a landslide, sustaining multiple injuries from all of which he recovered at the end of 36 weeks except from that inflicted upon the knee. This was lame, weak and unstable. The tibia would stay in its proper relation with the femur only when it was held forward, immediately dropping back if left alone. It could be brought forward somewhat in front of the femur and there was also free lateral movement. Fluid in joint. At operation the joint capsule was injected and there was much effusion. Both crucials were torn across at their upper insertion and frayed out. As well as he was able, he reattached them to the synovial membrane as near as might be where they belonged. Catgut was used. At the end of a month of fixation passive and then active efforts were commenced to restore motion. Six years later he was seen by Robson's house surgeon who reported his leg as perfectly strong. He could walk without limp and was able to run. Worked 8 hours per day at his old work in the mines and only when he became very tired did he have any discomfort in the knee, and then only on the inner side. There was no abnormal mobility. Extension was complete; flexion a little limited after a right angle was passed with some crepitation and pain if forced flexion was attempted.

W. B. BATTLE, *Trans. Clin. Soc. Lond.*, Vol. 33, p. 232.

A woman of 50 had her leg caught between a station platform and a moving train and outwardly twisted. Admitted to St. Thomas Hospital, July 23, 1898, and discharged Oct. 8, 1898, with a leg capable of flexion to a right angle and ability to walk well. The ligaments of the joint seemed intact. There was evidence of rupture of the crucials and lateral ligaments and open operation was undertaken, after failure by manipulation to be able to secure a readjustment of the

bones, a fascial band was found to be obstructing and was divided. The anterior crucial was completely torn across and the posterior partially torn. The crucials and laterals were sutured with silk and the ligamentum patellae was also sutured as the joint had been opened by that route.

SIR ROBERT JONES, *Clin. Jour. Lond.*, 1906, Vol. 28, p. 51.

In this article Sir Robert treats of the internal derangements in practically the same way and based upon about the same material that he does in the article in the *Annals of Surgery* for 1909. There are no other reported cases or ideas regarding the condition.

Avulsion of the Spine of the Tibia. J. H. PRINGLE, *Annals of Surgery*, Aug., 1907.

Three instances on record at that time, viz., that of Dittle, Poncet, and one admitted in 1873 to the University College Hospital in London. In all three of these cases the lesion was discovered either after death or at amputation. Author's case: CASE I. Male, 36, admitted to Royal Glasgow Infirmary June 14, '03. A large, powerful man was knocked down by the shaft of a cart and the knee forced inwards. There was much bruising and effusion and the only abnormal mobility was in abduction at the knee. Question of crucial rupture was raised, as was that of rupture of internal lateral ligament. On exposure of the internal lateral ligament 10 days after entrance, there was no evidence that it was not intact. Under the anaesthetic, as before, there was no abnormal antero-posterior movement at the knee. The joint was then opened and it was found that the anterior crucial, still attached to bone, had pulled the spine of the tibia away from the head of the tibia. This was sutured with a little difficulty. He has been seen several times since and has a good result though a slight amount of abduction persists and in coming down stairs he occasionally has a little trouble.

CASE II. In 1902 Pringle saw an athletic young man, who 5 months previously had been injured in the knee at a football game, and since then there had been instability of the joint. There was great looseness of the joint without fluid when seen by Pringle and apparently about 25 degrees of abduction with the leg in full extension was possible. There was marked atrophy of thigh and calf. The tibia could not be displaced forward and no abnormal rotation was possible. However at operation there was forward movement of the tibia on the femur without rotation; no rupture of the internal lateral ligament but a tear of the anterior crucial which was reattached to the external condyle. Good recovery with restoration of stability and confidence together with the resumption of all athletic activities with very slight abduction in full extension. A second injury 3 or 4 years after

was productive of a severe strain without any permanent injury.

The author then proceeds to discuss crucial ruptures, citing first Dittle's case and then Robson's. Dittle's case was caused by forcible abduction of femur with leg in flexion. The leg was amputated and avulsion of the tibial spine then noted. Patient died and Dittle was able to produce the same lesion in the other leg with some difficulty, experimentally, by applying the force as it had been applied in the production of the accidental avulsion.

Pagenstecher and Harrigschmeid have both produced this lesion and rupture of the crucials by blows upon the front or back of the head of the tibia. Pagenstecher was only able to rupture the anterior crucial from its femoral attachments. Hyperflexion and hyperextension are capable of most often rupturing the anterior and posterior ligaments respectively.

Pringle is of the opinion that flexion, abduction and rotation of the leg, when the pelvis is fixed, is the more common method by which the anterior crucial is ruptured and of the three, rotation is of the greatest importance. He further states that it is his belief, as a result of his experiments upon the cadaver, that when the anterior crucial is ruptured a greater amount of rotation (inward) of the tibia upon the femur occurs with the leg in complete extension and that under these circumstances the internal lateral ligament has been subjected to great stress and its deeper fibers have been torn, thus permitting of abduction of the leg when extension is complete, an impossible situation without rupture of the anterior crucial. In conclusion he decides that abduction in full extension means rupture of anterior crucial plus tear of deep fibers of the internal lateral ligament; that ability to push the tibial head backward with leg in flexion means posterior crucial tears, whereas ability to move the tibial head forward means anterior crucial tear when leg is in extension. He concludes that all joints with any of these phenomena present should be explored and that often, in this way only, can an accurate diagnosis be made.

SIR ROBERT JONES (*Annals of Surg.*,) Dec., 1909 cites one case of fracture and backward displacement of a tibial spine, together with the crucial ligament attached thereto, and says he recalls no other case related in the literature. (Case IX in this series of reported cases.) His case was a 40-year-old man whose injury was from a bicycle accident. Effusion and inability to extend the knee. The anterior crucial was carried back with the tibial spine. Bone was removed leaving enough fibrous tissue to which to attach the anterior crucial and secure a fair functional result without power for complete extension. This operation was not done until 8 months after the accident.

In regard to the ruptured crucial she had op-

erated only one, in 1909. The anterior crucial was completely torn across and frayed out. Suture was by plication, not end to end, but in 8 months stability and mobility to the joint were secured. In this case 10 weeks after the accident, which resulted in a dislocation of the knee, there was inward, but no outward, rotation, and the tibia could be displaced forward when in extension. A second one in a boy of 15 with a dislocated knee (plus a necessary rupture of both crucials) he kept in fixation 2 months and obtained a good recovery. He believes that it is a not uncommon injury and is amenable to mechanical treatment with good results if this is kept up long enough.

S. ALWYN SMITH. *British Journal of Surg.*, vi, 176, 1918. Injuries to the Crucial Ligaments.

The writer makes a series of 9 cases the subject for a clinical report and discussion of the subject of injuries to the crucials. He comments on the fact that up to ten years previous to the time of writing very little had gotten into the literature on the subject. He refers to the experimental work of Höjüg, Schmeid, Pagenstecher, and Little. Pringle's case of avulsion of the tibial spine (1907) and Corner's work on the surgery of the knee-joint (1914) are the subjects of reference. The writer, while associated with Sir Robert Jones, was struck by the fact that whereas intra-articular fractures were more frequent than was commonly supposed, many of them were connected with crucial ligament injuries and in almost as many there was no such injury to the ligament, though the trauma was to all intents the same. Oftentimes there would be a fracture of the tibial spine without crucial ligament injury. One of the purposes of the paper was to show the importance of stretched or strained crucial ligaments when associated with injuries to the semilunar cartilage, offering an explanation as to why the usual surgery of the semilunar injury was not as successful in individuals whose semilunar dislocation was complicated by crucial ligament tear.

He enumerates the supports of the knee-joint, particularly the muscles, the synovial and fibrous capsule, with its lateral and posterior reinforcements, also the semilunars and crucials. Each and every one of these is dependent upon the other to a certain extent. He also cites the mechanism by which each is aided to exert its protective action upon the joint; e.g., of the semi-tendinosus tendon in posterior crucial tears just as the sartorius is used in the anterior crucial substitution.

The results of his 9 cases have been in the main satisfactory though the results in two were bad. These were the earlier cases and may perhaps be due to imperfections in early technique.

ROBERT JONES and A. SMITH. *Brit. Jour. of Surg.*, 1913, i, 70. On Ruptures of the Crucial Ligaments of the Knee and Fractures of the Spine of the Tibia.

Though Pringle's case of tibial spine avulsion was the first reported as successfully stitched back, Richard Godlee, in 1888, described the first citation in the literature. This was from a case amputated by Erickson in 1873.

The authors do not wholly agree with Pringle in his explanation of the mechanism of avulsion of the tibial tubercle for they think it does not explain all the cases. They had seen and report 17 cases of injury to the spine of the tibia in 3 years. They describe the shape and size of the tubercles and the inclination of the intercondylar notch and call attention to the fact that osteo-arthritis changes in the spines cause sharpening of the tubercles and then state the signs that indicate rupture of the crucials and the chief indication of avulsion of the tibial spine.

A. PONCET, *Bull. et Mém. Soc. de Chir. de Paris*, 1875, i, Arrachement de l'épine du tibia à l'insertion du ligament croisé antérieur.

This is a record of a verbal report made by M. Despus from the Chief of the surgical clinic of the Hotel Dieu of Lyons. The anatomical material was demonstrated from the autopsy of a man of 50 who fell from a height and died as a result of a skull fracture. At the autopsy the surgeon in attendance, by pure accident, had the left knee-joint opened, though there was no evidence of external violence, and found the joint full of blood and the anterior crucial was observed attached to the spine of the tibia, which it had avulsed. Poncet thought such a lesion must be caused by torsion of the knee and might occur with very little evidence of its existence from the outside.

MEDICAL TIMES & GAZETTE, 1876, ii, 389. Separation of the Spine of the Tibia.

This article cites as rare, at this time, of the type of fracture of the tibia described by Prof. Pulee of Bordeaux, as follows: An energetic landlord was ejecting a tenant whose legs "Crossed themselves backward." Someone gave the man a kick in the thigh which resulted in a bloody effusion into the knee-joint. Aspiration was followed by infection and amputation. Examination of the specimen showed that the torn portion of the anterior crucial ligament had detached itself from its lower origin and had pulled an oval portion of the head of the tibia off with it. The discovery of this condition led Dittle to try experimentally to repeat on the cadaver the kind of violence that had resulted from this sort of injury. The method employed consisted in the application of force in flexion, extension and rotation. In extreme extension the tibia gave way and if anything occurred inside the joint it was the posterior ligament that yielded. In over-flexion it was the anterior ligament that gave way but always remained attached to the tibia. This report is in *Centralblatt für Chir.*, No. 29. He refers then to Poncet's case and cites still another, now in

the Museum of the Univ. Coll. Hosp., London, obtained in April, 1873. This was exactly like Poncet's except that the patient was a boy of 11 years.

G. COTTE, Three cases of Restitution of the Crucial ligaments of the Knee. *Lyon Chirurgica*, Vol. 16, 1919, 586.

CASE I. A young man, 21, was thrown by the explosion of a shell while in service, the leg being in a position of forced flexion. He could not get up nor walk; great effusion immediately. Treated by immobilization and massage, passing through a number of hospitals until he finally fell into the writer's hands, at which time there was no pain or motion but a decided laxity both to antero-posterior as well as lateral motion. The forward movement of the tibia from a position where it was easily palpated in the popliteal space could readily be recognized. It also would appear that there was a rotation of the femur on the tibia. Open incision was resorted to and the anterior crucial was found ruptured. There were only two thin strands of fibrous tissue left to represent it. With Allen's perforator he tunneled both the tibia and the femur and passed a suture 3-4 mm. in diameter holding the two bones in close apposition, the suture being buried in the periosteal tissues. Silk was the material used supplemented by a few catgut sutures. A posterior splint was employed. This was removed on the 30th day and for the first time passive motion was practised. Seven weeks after the operation and at the time of leaving the hospital the result promised to be an excellent one, but when later he was seen after commencing to walk, the laxity and subluxation returned and the results seem not to have been as good as promised.

CASE II was a soldier who had ruptured a crucial (anterior). He was operated first for a fringe which though removed brought no relief. A second time he had the joint opened and the ruptured crucial was found and repaired with a strip of fascia lata with no better result apparently, for there was great pain, effusion and locking of the joint. A third arthrotomy was performed to arthrodesis the joint and it was then discovered that he had a dislocation of the semilunar which was responsible for the symptoms following the two previous operations and that the crucial repair was satisfactory. The patient refused to have anything done other than an arthrodesis.

CASE III. This patient was a young man who had a ruptured anterior crucial and a dislocation of the semilunar. He was kicked by a horse and his symptoms were all those of semilunar dislocation. The operation was performed after exposing the joint through a U-shaped incision. The anterior crucial was repaired by suturing a piece of fascia lata in its place, removing the torn meniscus of the semilunar,

and restoring the patellar tendon. He was enough better so that he was accepted for military service whereas he had been refused before.

His belief is that rupture of the crucials alone is a rare accident; that the lateral ligaments are commonly ruptured along with the crucials and that not infrequently a meniscus goes with them. His confrère, Tarnavir, holds an opposite opinion and he reported cases of the same sort in this same journal.

MEDICAL RECORD, Vol. 96, 1919, p. 948.

There is a discussion occurring in the New York Academy of Medicine at which a paper was read by Dr. W. A. Sherwood, based upon 400 cases of knee-joint injury, occurring during the period of military preparedness at U. S. Army Hospital No. 1. There were several cases of ruptured crucials and fractures of the tibial spines. The paper has not yet been published or at least come out in the literature. The meeting of the Academy at which it was read was that of Oct. 3, 1919.

PARIS CHIRURGICAL SOC. DES CHIRURGIENES DE PARIS, xi, 1919, pp. 53 & 252.

1. Rene Le Fur. Primary suture of crucial with recovery.

Had previously reported 6 cases with good results from operation. The case he now reports, 26 hours after the injury, was one of severe injury from a bullet in the knee, with cutting away of the crucial and injury to the superior articular support of the tibia. Operated immediately, very minute care being given to the sterilization of the joint with ether. Three months after the operation, consisting of disinfection, repair of crucial and a partial resection of the articular surface of the tibia, it was impossible to see any difference between the sound and the wounded knee so far as function was concerned. The incision was closed without drainage, which is a menace to any joint, the writer claims.

2. Henry Fay. Primary suture of ligament of knee.

Report of a shell explosion as a result of which the knee-joint was opened by a shell fragment which imbedded itself in bone and ruptured a crucial.

Complete sterilization with ether one-half hour after injury and repair of rupture with perfect functional result.

E. W. HEY-GROVES. *British Journal of Surgery*, 1919-20, 7, 505.

Hey-Groves says that all the crucials he has seen have been so destroyed that there was no question of suturing them. He believes that it is justifiable to explore a knee-joint through a full exposure to secure opportunity for observing the entire joint if for no other reason than to enable a diagnosis to be made and he feels that many of the obscure cases may be diagnosed

and treated in this way. Mayo Robson appears to have been the first to undertake the repair of a ruptured crucial though Battle published a case first. Gaetjens reviews the literature to 1913 and found 33 cases which, with his 7, made 30 in the literature up to that time, and he included among these Mayo Robson's. Of these, 12 were subjected to an open operation. In 5 an attempt was made to effect a repair and in the 5th it consisted in the removal of bone torn off by the ligament. In 1913 Robert Jones and A. Smith reported a number of cases of fracture of the tibial spine some of which were associated with rupture of the crucial ligaments. In 1917 the author reported an operation for the repair of these ligaments by means of fascia or tendons. During the war the rupture of these ligaments was quite common and in the 3 years before the publication of this paper the author had operated 14 cases. He then describes the anatomy of the crucials at length. Most of his cases occurred as the result of being knocked down or buried by shell explosions. He then describes under diagnosis the symptoms and physical signs, the balance of the paper being a description of his tunneling operations through the internal condyle for rupture of the anterior crucial and the external condyles for rupture of the posterior crucial with the introduction through the tunnel of a portion of the gracilis and semitendinosus tendons in the latter.

As to the methods of getting at the ligaments for purposes of repair, he feels that the method of dissection and removal of the tibial tubercle ($1\frac{1}{2}'' \times 3\frac{1}{4}'' \times \frac{1}{2}''$ of bone) and reflecting it back, dissecting carefully so as to preserve the tendons on the inside and the ilio-tibial band on the outside is the best. The advantage of this over Alwyn Smith's median patellar incision, is that in this method it is not possible to give the right inclination of the new ligament, which should be downward and forward in the case of the anterior crucial and downward and backward in the case of the posterior, though it is true that this direction is more nearly vertical than that of the anterior crucial.

His cases were all of rather recent date, so that he cannot report end-results, but so far as he can, in the 14 cases, 4 showed no benefit, 4 were benefited to some degree; 4 were cured to such an extent that they could return to active duty in civil life without the use of a splint that he makes them all wear when they begin to walk. Two had been operated upon only two months before publication of the paper.

Fracture of the Tuberosity of the Tibia. Report of 3 Cases. JAMES W. SEVER. *Jour. Am. Orth. Assn.*, May, 1916, xiv, 299.

Sever reports 3 cases, one from an automobile accident and two from falls. He was unable to offer any explanation from the study of these cases as to how the force that caused them was

applied. He feels that two of his cases in addition to the tibial tuberosity injury had rupture of the anterior crucial.

CASE I. (Sever) Patient was a young woman who was knocked down by an automobile and right knee injured. Taken to hospital and her x-ray showed she had fractured the base of the external tuberosity of right knee about two-thirds of the distance from its anterior border. There was some downward and outward displacement. She was treated with a cast. The end-result was not a perfect knee because there was some knock knee and a weakened joint hindering her from using the leg as freely as she would like.

CASE II. (Sever) A steward, of 59 years of age, fell four ft., striking on knee. Wore cast 2 mos. and then a caliper splint for 2 mos. Seen by Sever 2½ yrs. after accident, when he could not use his leg well enough to do his former work. Could not walk without crutch; leg was weak and he tired easily. Moderate knock knee on affected side, with increase of abduction. About the external tuberosity there was bony thickening. X-ray showed fracture through external condyle of the tibia, extending into joint and also that the tuberosity of the tibia had been injured and slightly displaced. The slope of the external articular surface of the tibia had been altered. This evidently caused joint strain, which was the basis of his symptoms. There is not in this, nor was there in Case I, any restriction to complete extension. Sever thinks that by balancing the weight over "Thomas heels," relief can be brought to symptoms.

CASE III. Male, 45, fell 60 ft. six months before Sever saw him. He had multiple injuries. For 2 mos. he wore a ham splint on the leg with the affected knee. There is thickening about the internal tuberosity and a slight ridge where the upper fragment has slipped forward. Leg can be fully extended, but flexed only to right angle. Functionally the result is good. X-ray shows the fractures through the condyle, the head of the fibula and the head of the tibia.

J. J. KURLANDER. *Surg., Gynec. & Obstet.*, 1915-1920, 179. Fracture of the Spine of the Tibia.

A single case is reported with reference to the work of Pringle and Godlee in 1907 and 1888 respectively. Male, 19, fell in 1913. While jumping from a wagon he landed in such a way that his leg flexed suddenly and struck his knee on the curb. He could not rise and could not extend the leg. Great swelling, pain; x-ray said to have been negative. A later x-ray showed a transverse fracture through the spine of tibia. He made a complete recovery under the use of plaster cast in full extension. Quotes two of Sir Robt. Jones' cases and refers to the possibility of operation in certain instances, but advises against it unless fixation fails.

Same author later, in *Jour. Am. Med. Assn.*, Sept. 10, 1921, pp. 855, adds two more cases and a fuller discussion of the literature. This was in a paper read before the A. M. A., orthopedic section, at Boston, June, 1921.

His two additional cases were caused by violence from falls. In one case in a woman of 50, when she fell on the stairs, her knee being flexed and abducted strongly. There was no sign of crucial ligament rupture, but there was too much abduction of the tibia on the femur, due to internal lateral ligament tear. X-ray showed avulsion of the tibial tubercle. He lost sight of this patient.

The third case was a 25 yr. old man whose fall caused him to violently hyperextend the knee. Was seen 4 mos. after injury by Kurlander when the chief complaint was of locking the knee, causing pain. There were a few degrees of limitation in motion in flexion and extension. There was no sign of crucial ligament tear. X-ray showed a crack through the tibial spine. He reviews the literature available.

FOSDICK JONES. Fracture of Tibial Spine. *Col. Med. Jour.*, Aug., 1920, pp. 217.

The author reports one case and reviews the bibliography. He refers to the cardinal symptoms of this injury as excruciating pain; great swelling within a few hours; inability to extend and flexion of from 15 to 35 degrees. Advocates conservatism in treatment and gives good prognosis under careful management.

His own case was that of a strong, athletic young man. Left leg was caught between the forward bumper of his car and the garage door, the force being directed against the inner side of the left knee. Could not flex or extend leg; had great pain and extensive effusion within an hour. Pain continued for 5 days and was over internal tuberosity of tibia; there was very little motion and attempts to secure it were very painful. There was an oblique fracture of the tibial spine, with displacement backward of upper fragment. Forceful extension and a cast were applied and continued for 9 weeks. Motion has increased until at date of reporting case full extension and flexion to 95 degrees were possible without lateral or antero-posterior displacement.

At this meeting 6 other cases were shown by x-ray, occurring in the practice of other Colorado surgeons, all showing fractures of the tibial spine.

CONCLUSIONS.

The keynote of the experience of the most careful observers seems to be that ruptures of crucial ligaments are not as serious affairs as at one time they were credited with being. Very serviceable joints may be expected after injuries of this nature and the operative methods employed may be counted upon to restabilize the joints with very little surgical risk. It would

not appear that in the majority of instances the conditions call for the tunneling operations and transference of muscles or transplants of fascia. Through the median patellar incision the opportunity to deal pretty directly with the crucials enables one to repair them or bridge them so that they repair themselves. Protection with a "cage" splint for several months after walking is commenced should be insisted upon.

So far as the treatment of avulsions of the tibial spines are concerned, my own experience might of course be wholly deceiving. It was sufficiently convincing to me, and from what I can learn about them in the reported cases, my impression has been borne out by the experience of others, viz.: that they should be treated conservatively by a cast with the leg in extension.

One final impression that such thought as I have been able to give to this subject has left upon me is that the probable reason for the comparatively good functional results that follow upon injuries that theoretically seem as though they were certain to be more or less serious, is that the contours of the articular surfaces of femur and tibia are not disturbed in the ligamentous tears. If they become distorted motion is lost and function is impaired, but when they are spared from injury the repair of these structures ensures a very considerable and generally fairly complete restoration to function.

An arthritic patient who lies abed for a long time with legs in slight flexion or complete extension will square off his condyles and subluxate his tibiae to such an extent as to completely incapacitate him even before he has eroded his cartilage or injured his capsule or ligaments enough to produce an incapacitating arthritic condition. If such osseous distortions may be avoided, there is scarcely any limit to the amount of legitimate optimism we may entertain as to the possibilities of repair and restoration of function in a knee-joint.

COMPARATIVE STATISTICS ON PHYSICAL EXAMINATIONS OF PUPILS OF THE BOSTON PUBLIC SCHOOLS FROM DECEMBER 1, 1915 TO JUNE 30, 1922.

BY WILLIAM H. DEVINE, M.D., BOSTON.

Director of Medical Inspection, Boston Public Schools.

There is a law in Massachusetts requiring annual physical examinations of school children. It is surprising the lack of knowledge that exists among parents, educators, and even physicians in regard to the requirements. When unreasonable parents protest, they are surprised to learn that the examination is compulsory, and promptly yield to argument when informed of this fact. Since the writer has had charge of medical inspection in the Boston public

schools, all have submitted to the annual examination; no child is excused.

The law requires that children shall be separately and carefully examined every school year, and a written notice of any defect or disability sent to the parent or guardian. In Boston, it is required to complete these physical examinations before December first. The wisdom of this rule is obvious—it admits of prompt and timely treatment.

In some states a law which allows the family physician to make examination has been tried. I cannot see any advantage to this. It would be impossible to obtain the impartial and uniform records by this method as by examination of school physician.

All children are weighed and measured at time of physical examination and record of weight and height is made on physical examination record card. Outside wraps, such as coats, sweaters, etc., are removed before weighing. Children from the kindergarten to the sixth grade, inclusive, are stripped to the waist for physical examination.

In addition to the regular routine examination, the school physician examines all children who require it as often as necessary.

Physical examinations of girls in high, Latin, and Normal schools are made in the presence of the instructor of physical training, the teacher, or matron. Physical examinations of pupils assigned to open-air classes are made in September and re-examination in February.

Every child between the ages of fourteen (14) and sixteen (16) years, who presents the required promise of employment card, and other evidence required by law, to the school physician assigned to the office for the issuance of employment certificates, is examined by the physician who certifies whether or not the child is sufficiently sound in health and physically able to perform the duties indicated on the card. (See Table 1.)

Children in open-air classes and in malnutrition groups are weighed and measured monthly and record is kept on special cards.

Special physical examination of candidates for the Normal school are made by the school physicians in January and June preceding graduation from high school. Report on each examination is sent to the Director of Medical Inspection. Applicants for admission to Normal school may be rejected for any of the following causes:

- Communicable diseases, *e.g.*, tuberculosis
- Defective vision.
- Defective hearing.
- Epilepsy.
- Chorea.
- Chronic bronchitis or asthma.
- Affections that are
 - (a) unsightly, *e.g.*, chronic skin diseases.
 - (b) offensive in nature, *e.g.*, ozena and allied diseases.

TABLE 1.—REPORT ON PHYSICAL EXAMINATIONS FOR EMPLOYMENT CERTIFICATES
NOVEMBER, 1915, TO JUNE 30, 1922

	11-0-1915 to 8-31-1916	9-1-1916 to 8-31-1917	9-1-1917 to 6-30-1918	7-1-1918 to 6-30-1919	7-1-1919 to 6-30-1920	7-1-1920 to 6-30-1921	7-1-1921 to 6-30-1922
Number of children examined	10,174	17,577	16,722	19,810	18,714	11,581	8,281
Boys	6,121	10,785	9,585	10,725	10,265	6,460	4,447
Girls	4,053	6,792	7,137	9,085	8,449	5,121	3,834
Number of children without defects	4,986	8,041	7,116	9,064	8,448	5,708	4,476
Number of children with defects	5,188	9,536	9,606	10,746	10,266	5,783	3,805
Total number of defects	6,603	11,846	12,906	13,239	12,872	7,144	5,011
Number of children recommended for certificates	9,969	17,103	16,988	19,470	18,048	11,049	7,839
Number of children not recommended for certificates	205	474	634	340	666	532	442

Any disease or condition which the school physician certifies and deformities that would manifestly interfere with physical activity, are also causes for rejection.

The results of annual physical examinations in public schools with re-examination of special cases is one of the most prophylactic features of public health measures. The timely treatment of diseases; the prevention of the spread of communicable diseases, *e.g.*, pulmonary tuberculosis, etc.; the discovery of defects qualifying children

for open-air and other special classes, are some of the advantages that are evident in addition to the many ailments discovered, and referred to family physicians and clinics.

It would be very difficult to carry out physical examinations efficiently without the assistance of the school nurse in the elementary school and the physical training instructor or matron in the high schools. Parents of girls in high schools and upper elementary grades object to examinations unless carried out in this manner.

TABLE 2.—COMPARATIVE STATISTICS OF PHYSICAL EXAMINATIONS OF PUPILS OF
BOSTON PUBLIC SCHOOLS FROM DECEMBER 1, 1915, TO JUNE 30, 1922

	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22
Total number of pupils examined	90,862	104,287	104,762	100,564	105,193	107,664	113,780
Total number without defects	30,781	38,318	43,128	43,328	46,095	51,158	56,262
Total number with defects	60,081	65,969	61,634	57,236	59,128	56,506	57,518
Defects as follows:							
Defective Nasal Breathing:							
Anterior	1,292	1,297	1,108	826	633	413	422
Posterior	5,966	5,282	4,975	5,338	6,158	4,652	5,108
Hypertrophied Tonsils	18,444	14,806	14,037	12,734	14,015	13,238	15,911
Defective Palate	351	169	121	65	48	54	113
Cervical Glands	18,841	7,746	7,201	4,777	3,351	2,319	2,585
Pulmonary Disease:							
Tuberculous	44	22	28	15	13	6	15
Arrested Tb.	—	—	5	—	—	—	—
Question	—	1	—	—	—	—	—
Non-Tuberculous	683	453	456	516	473	297	367
Cardiac Disease:							
Organic	1,330	1,406	1,624	1,572	1,502	1,455	1,696
Functional	1,668	1,716	1,864	2,209	2,215	2,404	2,365
Nervous Disease:							
Organic	74	48	46	26	54	45	47
Functional	221	179	138	149	174	160	136
Chorea	43	23	33	14	16	26	30
Orthopedic Defects:							
Tuberculous	88	76	63	51	37	32	38
Non-Tuberculous	1,698	1,770	1,774	2,221	2,131	1,881	1,845
Skin	3,071	2,978	2,308	2,007	1,716	1,706	1,718
Rickets	383	326	284	132	146	114	121
Malnutrition	2,110	1,712	2,087	2,359	2,353	2,543	3,023
Totals	56,307	40,010	38,152	35,041	35,035	31,345	35,510
Defective Teeth	56,750*	55,638*	50,507	44,531	45,567	43,685	41,783
Grand Totals	113,057	95,648	88,659	79,572	80,602	75,030	77,293

*During the year 1915-16, and from October 1, 1916, to January 1, 1917, defective teeth were classed as primary and secondary. In some instances, if a pupil had defective primary and defective secondary teeth, it was recorded as two defects instead of one. In order to avoid duplication of defects, it was thought advisable to record defective teeth without regard to whether they were primary or secondary. This method was adopted commencing January 1, 1917, and precludes comparison for the two years.

The number of cases of cardiac disease in the Boston public schools remains practically the same for the past six years. Naturally it would remain about the same or increase from year to year, as children are not excluded for this disease. The figures in the preceding report have been compiled from the examinations of forty-nine (49) school physicians, and the fact that these do not vary to any great extent in the past six years is some evidence of the accuracy of the observations of the medical inspectors.

All cardiac cases are followed up by the school nurses in the same manner as other defects—the homes of the pupils are visited and parents instructed relative to care. The teachers are also notified in order that these pupils may receive special consideration.

The total number of home visits by nurses during the school year just closed was thirty-five thousand, six hundred twenty-one, (35,621) for all cases. It is impossible to state how many of these visits were especially for heart disease but the large number of nurses' visits indicates that the cardiac patients were not neglected.

About two per cent. of the children in school populations are found to have some cardiac disorder. In the Boston public schools about 1.25 per cent. organic and about 2 per cent. functional.

For obvious reasons the causation is uncertain. Only by careful medical supervision and follow-up work can the etiology be traced with any degree of accuracy. Rheumatism, infectious diseases, defective teeth, tonsils, and other local conditions have assumed an important place in the etiology of cardiac lesions, although I believe the importance of the minor ailments in the causation of morbid conditions of the heart is exaggerated. I have known many cases where the removal of teeth diagnosed as defective by x-ray have been removed with the idea that it would improve or cure the heart. Practitioners should proceed cautiously in these cases as sometimes the shock and impairment of health due to loss of teeth is an injury rather than a benefit. The dentist and nurse have been too susceptible to the well-meant propaganda of ardent enthusiasts who can see dental defects as the cause of many cases.

I am not disparaging defective teeth or infected tonsils as a cause for heart disease and the proper treatment of these conditions is advocated. The early and thorough physical examination of the school child has been a great step in progress in cardiac prophylaxis. The general practitioner should examine the heart in routine manner when he attends the patient for tonsillitis, diphtheria, scarlet fever, rheumatism, chorea, and other diseases which are known to cause cardiac disease. Not only should he make frequent examinations during illness but after convalescence, if possible, and note the condition of the heart when the patient is discharged.

The following is the list usually given by medical authorities as etiological factors in heart disease: tonsillitis, acute rheumatism, measles, pneumonia, diphtheria, chorea, pertussis, scarlet fever, syphilis, influenza, bronchitis, typhoid, nephritis, otitis media, chicken-pox, carious teeth.

No endeavor is made to give the relative frequency of the list enumerated above. Osler stated that endocarditis is found post mortem more frequently in chorea than in any other disease.

The prevention of heart disease offers a great field in prophylaxis. The timely notification of parents is an important step in prevention procedure. There were many cases where school notification was the first intimation to parents that a child had cardiac disease. Its early detection in the schools; longer rest in bed after contagious diseases; the proper care of the teeth and removal of diseased tonsils and adenoids should tend to reduce the number of cases.

The prevention of heart disease has been treated in a masterly manner by Dr. Haven Emerson in the Shattuck Lecture, June, 1921. Those who are interested are referred to this gem of medical literature. He states:

"My objective will be to persuade you that it is within the realm of possibility, within the reach of present-day medical and social knowledge and resources to make as much reduction in sickness and premature death from heart disease as may be obtained by teaching, by diagnosis, by organized medical services in the control of tuberculosis. What is important to obtain but not yet available is a careful clinical and pathological study of the age of infection or onset of valvular or other organic heart disease."

To summarize the principal points in the prevention of heart disease, the writer would recommend:

1. Examination as soon after birth as possible.
2. Prompt notification to parents of any cardiac defect with recommendation for treatment.
3. Special care during and after convalescence—more rest in bed—freedom from excitement, etc., during the stage following acute diseases; examination of heart when discharging patient.
4. Prevention of rheumatism and other diseases causing the ailment. This should include proper care of the teeth, removal of adenoids and tonsils if necessary, etc.
5. The prevention of communicable diseases.

The following is a quotation from the Acts of 1908, Chapter 181:

"In each of the subjects of physiology and hygiene special instruction . . . as to tuberculosis and its prevention, shall be taught as a

regular branch of study to all pupils in all schools which are supported wholly or partly by public money."

The Director of Medical Inspection has reason to believe that that instruction has been conscientiously carried out in our schools.

Important points on prevention have been duly stressed by the physicians and nurses of this department in their instructions to teachers and pupils, and pertinent circulars have been distributed. These activities have been promoted by the earnest coöperation of the school force. The Director of Medical Inspection desires to emphasize the importance of continuing this good work.

The figures on tuberculosis as shown in this report may appear small but it must be taken into consideration that children with pulmonary tuberculosis are excluded from school and that naturally the number of cases would not increase at the same rate as cardiac and other diseases.

The tuberculosis leagues, Massachusetts and Boston, the tuberculosis clinics, the State and City Health Departments, the medical profession, school physicians, and school nurses have nobly coöperated in the prevention of tuberculosis.

CHRONIC INTESTINAL INDIGESTION DURING THE SECOND AND THIRD YEARS OF CHILDHOOD.*

By LEWIS WEBB HILL, M.D., BOSTON.

It is not generally realized that children during the second and third years need as careful dietary supervision as they do when they are on an exclusive milk diet, and many mothers who would not think of attempting to feed a small infant without medical advice, and who would take the utmost pains with milk modification, let the child eat practically anything he wants after he has begun to take solid food. It is this carelessness that is responsible for not a few of the cases of chronic intestinal indigestion which we all see so frequently; the rest of the cases follow an acute attack of fermentative or infectious diarrhea, which can likewise be largely prevented by proper feeding. Let us consider briefly the feeding of normal infants during the last quarter of the first and the whole of the second year.

There is at present a tendency to feed too varied a diet at too early an age, such as large amounts of green vegetables, potato, and eggs to infants even before they have reached the end of the first year. In many cases this does no harm, but in others it causes severe digestive disturbances, which may take months to repair.

My own practice is to begin semi-solid food, such as oatmeal, farina, or zwieback soaked in

milk, at the eighth or ninth month. At this time chicken or lamb broth with rice may also be added, and a small amount of apple sauce or prune sauce if the baby is constipated.

At the end of the first year the baby should be taking daily about a quart of whole milk, some starchy food such as cereal, zwieback, rice or dry bread, twice a day, a little soup or possibly beef juice, orange juice, apple sauce or prune sauce. This is a quite sufficient diet, and the average normal baby does well on it. At about the fourteenth or fifteenth month strained vegetables such as spinach, carrots or tender string beans may be added, and potato may also be added about this time.

Potato starch is for some reason more likely to cause digestive disturbance than almost any other kind of starch, and although we have all seen babies of a year old, or even younger, thrive while taking large amounts of it, in general it is best withheld until the fourteenth or fifteenth month. Potato and green vegetables should not be given on the same day at this time; it is usually best to give potato one day, a green vegetable and rice the next day. It is well not to give too much of the same sort of starch on the same day; if oatmeal is taken for breakfast it is best to use macaroni, zwieback or bread and butter for supper.

Soft-boiled or coddled eggs may be begun at sixteen months, a couple of spoonfuls at a time, and gradually increased until a whole egg is taken every day. Eggs do not agree with all babies, and if such is found to be the case in any individual instance, it is best to omit them temporarily from the diet, and to start them again in another month or two. Some babies who cannot take the whole egg can take the yolk, hard boiled and grated in with the vegetable or potato. Meat is usually begun at about two years, the best meat to use being chicken, lamb chop or crisp bacon. It is not common for meat to cause digestive disturbance, and I have a suspicion that it might probably be begun considerably earlier in small amounts, without doing any harm. No raw fruit should be given to children under four or five years of age; in this part of the country (North Carolina) all milk fed to babies and small children should be boiled or pasteurized at all times of the year, and it should not be Jersey or Guernsey milk. The child should not be fed between meals, and he should be made to eat every new article of food as it is offered, unless it actually seems to disagree with him.

It is just as easy to feed children correctly as incorrectly, and it will be found that the vast majority of children do well on the general plan outlined above. I have spoken somewhat dogmatically in order to be clear and to save time, and realize that very likely some pediatricists would criticize the above plan of diet.

So much for a brief résumé of the principles

*Read at the annual meeting of the Medical Society of the State of North Carolina at Winston-Salem, April 26, 1922.

of feeding a normal child; let us now consider chronic intestinal indigestion.

For practical purposes this may be divided into two groups: the mild cases, and the severe ones. In the mild cases there is a certain amount of indigestion, due almost always to overfeeding with fat or starch, but there is no far-reaching general nutritional damage, and the indigestion is not in most cases hard to correct. In the severe cases there is present a marked and a long-standing indigestion, which has continued so long that severe damage to nutrition has been brought about, which may take years to correct.

The Mild Cases.

A child of two or three years is brought to us because of failure to gain, poor color, occasional undigested stools, and probably a certain amount of abdominal discomfort. Upon examination we find a child who is somewhat underweight, who is pale, whose flesh is rather flabby, and whose abdomen is likely to be somewhat enlarged. There is nothing else found upon physical examination. Careful observation of the bowel movements is here of the utmost importance, for by knowledge gained from this source, together with a consideration of what the child is eating, it is not difficult to find out what element or elements of the diet he is not digesting. The trouble is usually due to overfeeding with either starch or fat, and the stools vary according to which element is at fault. In the starch cases they are likely to be rather large and mushy, of a brown color, and with a peculiar half sour, half foul smell, which somewhat resembles that of a pigpen. If fat is at fault they are likely to be rather light colored and not so large or so mushy as in the first case. Microscopic examination is of considerable importance, and without it, in this type of case, one is working in the dark. One may find a large excess of either fat or starch in the movement, and make one's diagnosis accordingly. Anything more than the very smallest amount of undigested starch is abnormal, but it must be remembered that there is normally not an inconsiderable amount of fat present. It is not possible to treat those cases successfully, unless one knows which food element is at fault; this is accomplished by a study of the diet of the child and by examination of his bowel movements.

The treatment of the mild cases is not difficult, and is most satisfactory. It consists simply in considerably reducing the amount of the offending element in the diet. In the mild fat cases it is usually enough to instruct the mother to pour off all the cream from the top of the child's milk, and to omit also butter and bacon. In the starch cases a reduction in the total amount of starch taken in, and a limitation to the more easily digestible forms is all that is required. Potato should always be with-

drawn and the green vegetables should be considerably restricted. Rice jelly, crisp toast or zwieback are, probably, as easily digestible as any form of starch. Rice can be given in the morning, and possibly again at noon, the zwieback at night. The rest of the diet would consist of milk, eggs, meat; essentially, then, the diet of a normal child with the starch somewhat restricted both as to quality and quantity. Under this régime the abdominal distress should soon disappear, the stools should improve and the child should begin to gain in weight.

Following is a typical case of starch indigestion of rather mild degree.

H. S. was first seen at fourteen months on account of failure to gain, and undigested bowel movements. She had been breast fed up to eleven months, and was then put on whole milk, cereal, broth, baked apple and baked potato. She takes one small potato every day, and likes it the best of anything in her diet. She weighed 21 pounds 8 ounces at one year, and has not gained since. Her stools are always rather large, and somewhat loose; today she has had three foul, mushy ones. Physical examination showed nothing remarkable except a somewhat distended abdomen, and a rather flabby condition of the flesh. The stool was large, mushy and rather foul. It was brownish green in color, and contained a good many small masses which looked like pieces of undigested potato. Microscopically it showed innumerable granules of undigested potato starch. This child was put on the following diet:

Breakfast: Milk, 8 ounces, plus oatmeal or farina.

Lunch: Milk, 8 ounces.

Dinner: Soup with rice, and one or two tablespoonfuls of well-strained carrot or spinach, junket, milk.

Supper: Macaroni, or zwieback and milk.

In a very few days her stools had improved, and about this time the grated yolk of a hard-boiled egg was added to her diet. She did very well right along, was kept on this diet for about three months, and potato was not added to her diet again for another three months. She is now about four years old, and handles potato and all other starches without difficulty.

The very severe cases are different. This condition, which we call severe chronic intestinal indigestion, is called by the English the "Coeliac" or the "Mucous" disease, and the late Christian Herter of New York, who was much interested in it, called it "Intestinal Infantilisim."

It is in reality a late stage of the condition of mild indigestion that we have already described, where the process is of such duration and severity that severe nutritional damage has resulted. It usually begins during the sec-

and year, but may be seen in children somewhat older. It is very likely to follow an acute attack of diarrhea, or may come on more insidiously. The chief thing about it is the extreme impairment of nutrition. The abdomen is very large, so much so that the disease is not infrequently mistaken for tubercular peritonitis. The face is sharp and haggard, the skin loose and inelastic without any subcutaneous fat, the extremities frail and weak, often so much so that the child cannot walk. The stools, which form a very important part of the picture, vary at different times. They may be large and formed, rather light in color; this type of stool contains a large amount of fat, and is likely to be seen when the diet contains a considerable amount of this element, as would be the case if the child were taking whole milk.

At other times the stools may be very mushy, unformed, and may show large amounts of undigested starch and cellulose, both macroscopically and microscopically. This type of stool is seen if the child has a considerable incapacity for starch, and if much starch is fed. There will also usually be occasional periods of diarrhea, when the stools are very loose and watery. During these periods they will usually contain large amounts of mucus, sometimes more mucus than actual fecal substance. The stools always smell very badly, no matter what sort of diet is taken. If starch and sugar are being fermented they will usually smell sour, and will react acid to litmus paper; if a considerable amount of protein is taken, they are likely to be very foul, and alkaline. Vomiting is not ordinarily present, but may be in some cases, and is a most troublesome symptom. The child is very much stunted in growth, both as regards height and weight, and a child of three years may weigh as little as 18 or 20 pounds. The mentality is, however, unimpaired. These children are almost always alert mentally, but are likely to be of a rather peevish disposition. Rickets is occasionally associated with the condition, but not frequently enough to be of any significance. What is the cause of the condition, and what conception shall we take of it in order to formulate a basis of treatment? There is no evidence to show that it is primarily an organic disorder of one of the larger digestive glands, such as the pancreas or liver; there is no evidence to show that the essential etiological factor is a primary inefficiency of any of the digestive ferments, and all students of it have tried the administration of various of these ferments without success. At autopsy there are no especially noteworthy or characteristic lesions found except a rather thickened and irritated intestinal mucosa. Probably the best conception to take of this condition is that it is brought about by a chronic infection of the intestinal contents (note I do not say intestinal wall) with organisms which should not be there, and that the small intestine, which should nor-

mally be relatively free from bacteria, is flooded with an alien bacterial population, which hinders the normal process of digestion that should go on there; this bacterial population lives upon the food within the digestive tract, and the irritating products resulting from bacterial decomposition of the food set up a chronic inflammatory condition of the intestinal mucosa, which in its turn probably hinders digestion and absorption. The late Christian Herter, who was as close a student of this condition as anyone, believed that the bacillus bifidus, which is so commonly and normally found in the stools of breast-fed infants, and an organism which he called bacillus infantilis, were the two most common offenders. For us the name of the organism or organisms which are present is not of especial significance, as long as we understand that they are almost always organisms which seem to thrive upon starch, and which do not readily attack protein. It is not certain whether the fat intolerance practically always found in these cases is caused by direct bacterial fermentation of fat or is secondary to the original carbohydrate decomposition.

This, then, is our working conception of chronic intestinal indigestion, and is probably not far from the truth. In a word, therapy consists in reducing or entirely removing from the diet the food or foods upon which the especial group of organisms which are present in any individual case, seems to thrive. By so doing, by declining to furnish a suitable culture medium to the abnormal bacterial flora, it tends to die out, and normal conditions are gradually restored.

We have four foodstuffs to consider: fat, sugar, starch, and protein.

Protein is very well tolerated, and a diet very high in protein is always advisable. A moderate amount of sugar, such as would be contained in milk, is usually tolerated and often very much more than this. Starch is hardly ever tolerated except in small amounts, and the very severe cases usually do better without any starch. In severe cases we have before us, then, the problem of nourishing a child on sugar and protein, with as high caloric a diet as possible, as these children need more calories than the normal child, before they will gain.

It is not easy to withdraw all starch from the diet, as the normal child depends so much on this foodstuff to furnish him calories.

Milk forms the basis of the diet, and lactic acid milk is usually better tolerated than sweet milk. This should be fat free, and if the child will not take lactic acid milk, boiled fat-free sweet milk may be used.

Whereas one would not feed a normal child over a quart of milk a day at the most, it is desirable to feed these children as much milk as possible, so that certainly as much as 48 ounces daily can be used, and possibly more.

If the child has a good sugar tolerance,—and very many of these children do,—sugar is advantageously added to the milk, and is a very valuable foodstuff, as it has a high caloric value, and is easily assimilable. Sugar is best given in the form of corn syrup, as originally advocated by Marriott. Corn syrup consists of glucose, maltose, and sucrose, and is a very easily assimilable mixture of carbohydrates. One ounce by volume contains 33 grams of carbohydrate, and furnishes 136 calories. I gave one child nearly five ounces daily, thus furnishing about 600 calories by means of the syrup alone. Usually it is best to start with about two ounces a day, divided between the different feedings, and then to work up, if possible.

Meat is the next article of food upon which we have to depend, and although it does not furnish so many calories as does the syrup, it is very satisfying, and adds bulk to the diet.

A child of three years often will take and digest as much as six rounded tablespoonfuls of meat a day, and, contrary to the usual idea that meat is difficult of digestion, these children are able in most cases to digest it better than anything else. The white meat of chicken is the best meat to use, as it contains less fat than most other meat. Two other articles of food which are of value are cottage cheese, and muffins made from casein flour.

Cottage cheese is familiar to most housewives, and is made by adding a teaspoonful of essence of pepsin to a pint of warm milk. This is allowed to stand until it has "set," when the curd is broken up, and separated from the whey by straining through cheesecloth. It is then lightly salted and broken into fine granular crumbs. It consists almost entirely of casein, and a pint of milk will furnish about three rounded tablespoonfuls of cheese, which contain 60 calories. After a while a child learns to like this, and will usually take 4 or 5 tablespoonfuls daily without trouble.

Casein biscuits may be made from starch-free diabetic flour, the one I have used being "Diaprotein." It consists almost entirely of casein. These biscuits are rather dry, and not particularly inviting as to taste, but most children like them. The best way to give them is to break one in small pieces, and moisten it with a little milk. The average child of three years would take 5 or 6 of these a day.

Made according to the usual recipe, each muffin contains about 65 calories. The usual recipe calls for bacon fat; if this is left out, the caloric value is considerably less, and each muffin would contain only about 25 calories.

The cottage cheese and muffins are more or less interchangeable, being both made up largely of casein, and if one is used, the other probably would not be. As a general thing most children like the muffins better than the cheese. Let us recapitulate a moment and see exactly what

a child of three years, weighing 20 pounds, might take on this plan of diet.

48 oz. fat-free milk	=480 calories
2 oz. corn syrup	=272 calories
6 rounded tablespoonfuls chicken	=150 calories
6 Diaprotein biscuits	=380 calories
	1282 calories

This gives a total of about 1280 calories, or between sixty and sixty-five calories per pound of body weight: a rather ample diet. The following table of approximate food and caloric values may be found of service.

MILK.

	F	C	P	Cal.
8 oz. fat free	= 0	11	9	80
8 oz. skimmed	= 2	11	9	100
8 oz. whole	= 9	11	8	168

CHOPPED CHICKEN.

		F	P	Cal.
1 rd. tsp.	= 15 gm.	= .90	4.8	25
1 level tsp.	= 10 gm.	= .40	3.2	16.8
1 heaping tsp.	= 18 gm.			
1 rd. tsp.	= 8 gm.			

CORN SYRUP.

1 oz. by volume	= 33 gm. C.H. = 136 Cal.
45 cc. corn syrup + 55 cc. water	= 50 gm. C.H. = 205 Cal

COTTAGE CHEESE.

Cheese from 1 pint of skimmed milk contains 15 gm. protein and 60 calories. 1 pint makes 3 rounded tablespoonfuls.

DIAPROTEIN MUFFINS.

Recipe = 1 measure diaprotein flour (15 level tablespoonfuls)

- 1 egg
- 2 level tablespoonfuls of bacon fat
- 3 tablespoonfuls of water

This makes 6 to 8 muffins and equals 460 calories. 1 muffin = 65 calories if 7 muffins are made from the above recipe.

If no fat is used, the batch of muffins contains only 184 calories.

The best starch to add is rice jelly or zwieback, and in cases with poor starch tolerance one should be in no hurry to add it. If the child is doing well, it is best to let him go along for a considerable period, often several months, without any starch whatever. One of the first to recognize this important principle of an absolutely starch-free diet over a long period of time, or at any rate to write anything about it was, as far as I know, Dr. Philip Sylvester of Boston.*

Fat is added by working in a few ounces of whole milk instead of an equal amount of skimmed milk, but if much of this tends to come

*For his original paper, see the BOSTON MEDICAL AND SURGICAL JOURNAL, Aug. 26, 1920.

through in the stools, it must be again omitted.

Of the three vitamins A, B, and C, there is probably a sufficiency in this diet, with the possible exception of the fat-soluble A.⁶ Despite this, the lack of this vitamin in such a diet seems to do no harm, and I know of one child who has been on such a diet for a year, and who has done remarkably well.

The fat-soluble vitamins can be furnished by a small amount of spinach purée if the child can handle it well, but as a general thing it is better to leave this out. Or the same thing can be supplied by the yolk of an egg.

Cod liver oil is, of course, a most potent source of this vitamin, and if one is afraid of vitamin deficiency, a half teaspoonful of cod liver oil three times a day will insure a sufficiency of fat-soluble A. An adequate supply of water-soluble B and C is probably furnished in the large amounts of milk taken.

The course of this disease, if the case is a severe one, is long, and even under the best conditions, progress is slow, and occasional relapses certain.

At the onset of a relapse the bowels should be cleaned out with a good-sized dose of castor oil, the child should be put to bed, and nothing given to eat but milk. These relapses are inevitable, and need not cause discouragement. A slight pharyngitis, the cutting of a tooth, getting overtired or overexcited may be enough to excite diarrhea, and to cause a considerable loss of weight in a short period of time.

To sum up: a disease, the essential nature of which is probably an infection of the contents of the small intestine with organisms which should not be there, this infection being usually caused in the first place by overfeeding with too much solid food at too early an age, or by an acute attack of diarrhea. The basis of treatment is a low starch and fat, high protein diet. Nothing whatever in the way of results can be accomplished without considerable painstaking study of each individual case.

SCHOOL CHILDREN AND SPINAL CURVES.

BY E. H. BRADFORD, M.D., BOSTON.

THAT our school girls carry themselves badly is an admitted and regrettable fact. It is doubtful if school gymnastics conducted as they must be, are adequate to give desirable results. Posture classes may induce strong-backed children to attempt to stand straight, but the weak-backed will continue to take faulty attitudes as long as their backs are weak. As faulty attitudes in children threaten to develop into fixed spinal curves in adults, every well-wisher of the race is prompted at every school exhibition or assembly

⁶Skimmed milk contains a not inconsiderable quantity of the fat-soluble vitamins.

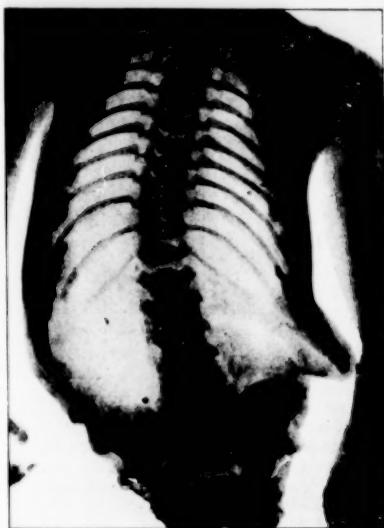


FIG. 1.—X-ray of fetal full term trunk showing the large amount of intervertebral cartilage.

of school children to demand more effective measures to correct the many flat-chested and round-shouldered individuals of the rising generation; yet the difficulty of the undertaking and the uselessness of inadequate efforts check the efforts of critics.

Curves of the spine in school children can be grouped into certain definite and easily distinguishable classes, requiring different measures for their correction, viz.—

1. Faulty habits of attitude in normal children.
2. Curved and sagging spines in children with weak spinal and trunk muscles.
3. Spinal columns with fixed faulty curves.
4. Twisted spinal columns.
5. Noticeably distorted figures.

Methods of treatment of curved spines in young, growing children, must differ from those employed in adults or even adolescents.

Deformities, *i. e.*, deviations in growing bone, tend to correct themselves if suitable conditions are furnished—nature favors growth to type.

Methods of treatment demanding rigid gymnastic exercises, class setting up drill, are with difficulty made effective with young children, whose muscular ambitions are not as fully developed as in later adolescence or young adult life.

In the days of rigid parental discipline, children who sat and stood badly were made to sit in straight-backed, shallow-seated chairs and lie on an ironing board and were roundly taken to task for slouchy attitudes. In these later days



FIG. 2.—Fetal trunk opened in front with pins inserted in the vertebral bodies showing the amount of possible side flexibility without rotation of bodies.

the example of the past may be followed to the extent of recognizing the fact that the environment is of prime importance in securing good carriage.

The slouchy, flat-chested plebe becomes, after a few months at West Point, noticeable for his erect figure—the drafted civilian holds himself much better after a well drilled service than in civilian life—and it is to improvement in home as well as school habits of the young, growing child, that importance must be paid in the hope of avoiding crooked backs in young children.

If it is remembered how much each day of the time of the active life of a child is passed in chairs, the importance of proper seating cannot be overlooked. Recognizing the more erect carriage of children among the chairless races than among our better furnished people, the inference suggests itself that in many instances curving spines may be a chair back deformity, and that in the early preventable stages low stool sitting, reading and writing at tall desks, combined with resting a tired back on a hard, flat surface, may be corrective home habits.

The school furniture problem cannot be said to have been satisfactorily met and the fact that school desks and chairs must be, to a large extent standardized to meet school regulations and marketable conditions, presents a difficulty not easily overcome. Perhaps the only way at present that is practicable is to arrange for frequent interruptions in the seated time in school hours with frequent setting up exercises. At home, reclining boards, low stools and standing desks and active hard play present a possibility of improved home conditions. An arrangement of this sort might be adopted in small, unconventional schools, but the necessary change would be too radical for adoption in large, firmly organized schools.

When evident muscular weakness is present,

attention to the need of improvement of muscular strength is evident; class gymnastics, physical culture drills are all of importance, but the value of daily home exercises is not to be ignored. In fact, it may be regarded as of the utmost importance. In by far the greatest number of cases effective home exercises can be satisfactorily carried out. Where curved spines are under consideration, attention must necessarily be turned to strengthening those muscles used in holding the trunk normally, as well as to correcting curves. It is a noticeable fact that all people accustomed to carried weights upon their heads are erect. Head weight carrying if possible as a daily home exercise, naturally suggests itself as a useful daily exercise. This is easily arranged if sand bags of different sizes and weights are used at home at stated times both for children seated and walking. Other dumb bell or weight and pulley exercises can be made use of. In weak children exercises should be limited to suit the child's condition and should be accompanied by periods of regulated rest.

In weak-muscled children, it can be expected that as the muscular strength improves there will also be an improvement in carriage if no abnormal conditions in the spinal column have been developed. But where faulty habits in attitude have become firmly established, in many instances more than daily directions as to improved posture will be needed. A constant corrective device is needed to restrain from dropping the head or shoulders forward, dropping one shoulder.

These should not be so constantly used as to weaken muscles or establish reliance upon these artificial measures, but daily for a sufficient time to give the patient a sense of a better attitude. Such checking shoulder and neck straps should be simple and adjusted with little difficulty.



FIG. 3.—The same, showing the amount of rotation in downward pressure exerted on the spinal column.

A serviceable arrangement of this sort can be made with webbing. If a loop of inch wide webbing, sufficiently large to include the shoulder blade, be applied to each shoulder with the attached webbing long enough to be crossed behind and again across the abdomen and buckled around the hips, the shoulder blades can be drawn back whether the patient is sitting or standing. If to these loops a webbing strap is attached, passing around the front of the neck, the head and neck cannot be bent forward without discomfort and are held erect. Where the spinal column sags in the dorso-lumbar region and there is a marked hollow back, forward pressure is necessary on the sacrum and upper part of the spinal column with back pressure on the abdomen, while the shoulders are held back and the neck kept from bending forward.

This can be accomplished by a simple arrangement. Two strips of steel are fastened together in the shape of a cross, the short cross piece to extend across the shoulders at the level of the axillae. To the top of the upright arm of the cross can be fastened a band of ribbon or webbing which can be tied around the neck. To the end of the cross arms is attached webbing long enough to pass around the shoulders, crossed in the back, to be buckled in front to a square piece of leather or canvas placed over the abdomen. The bottom of this abdominal piece is secured by straps coming around the lower part of the trunk from the lower of the steel upright. The abdominal cloth can be kept from rising by garter supporters or by attached webbing straps passing around the thighs.

The patient can with this arrangement be kept

for a required portion of the day in a proper position.

A different arrangement is needed if the faulty position is one with dropping of one shoulder, the projection of a shoulder blade and of a hip.

A light stiff upright should be made, long enough to reach from the middle of the cervical region to the lower end of the spine and well on to the sacrum. At the level of the axilla of the dropping side or somewhat above this, a cross piece should be attached at the end of which should be secured a piece of webbing attached at its upper end to the cervical end of the steel upright. This webbing loop should be sufficiently long to allow the arm to pass through it. The lower end of the upright should be furnished with a webbing strip which will pass and be buckled around the thigh and groin on the side opposite that of the dropping shoulder. A strip of canvas three inches wide, should be attached to the upper end of the upright, pass around the projecting shoulder blade, around the trunk in front to be secured by straps and buckles to a similar canvas band passing around the hip on the side of the dropping shoulder and attached to the bottom of the upright.

If this appliance is properly adjusted, correcting pressure will be made on the projecting shoulder blade as required, the dropping shoulder raised and the side bend of the spinal column checked.

It is understood that these appliances are not to be worn constantly, but are to be used at such portions of the day when a slouching position is less easily corrected by muscular trunk action, when rest is not feasible and the patient is less vigorous in efforts for self correction.

The spinal column of the infant is flexible in many directions, even allowing twisting to a considerable degree. After weight-bearing has come to the growing child as a part of the function of the spine in the erect position, physiological curves develop in the need of the requisite balancing of the head while the body is moved and the pelvis shifts in its inclination. As attitudes become constant, these curves become to a degree fixed from adaptations in the shape of the ligaments, fasciae, cartilage and bones. If faulty attitudes are too constantly assumed, faulty curves from abnormal stiffness in portions of the spinal column and abnormal twists. In addition, the ribs, sternum and vertebrae connected with the spinal column, being subjected to abnormal muscular strain, may become abnormally shaped. This is especially true if for any reason the bony tissue is structurally below normal resistance, as in the condition. Abnormality of the bones may exist in rarer cases congenitally, or from early abnormalities in growth. When these exist, more thorough treatment is needed than can be furnished by muscular exercises, rest, or checking appliances.

Evidently the period when treatment can hope to be successful is during more rapid bone

growth. Feasible measures of corrective pressure can alter the shape and position of twisted ribs and to a degree the adherent vertebrae in the same way that the Flat Head Indians alter the shape of their skull, or the Chinese that of the bones of the foot.

The question of the extent and thoroughness with which correcting pressure can and should be applied in each individual case is one of judgment.

There is also the need in some instances of shortened ligament and fascia stretching, needing different methods and exercises from those required in muscular development. This fact is recognized in the training of circus performers and tumblers and it is an art in itself.

These methods may be classed as (1) intermittent, (2) constant pressure or pull, and (3) stretching exercises with the opposing muscles relaxed. The laws of growth are little understood, but there is undoubtedly a strong tendency of bone to grow to type.

This should be recognized by physicians in the management of young children. The underlying causes of deformity should be investigated and conditions favoring the normal secured.

There are two common causes favoring faulty attitude: (1) clothing which restricts the normal play of the trunk and shoulder muscles, and (2) chairs in which lounging or incorrect attitudes are habitually assumed. As in all households the chairs generally used are adult chairs and if habitually used by children for a considerable portion of the day, faulty positions of the spine are constantly assumed and may become habitual and are not to be overcome by a few exercises practised a few times a week.

Loose clothing with freedom from drag upon the shoulders is necessary as well as restriction of the time spent in unsuitable seating.

These methods may supplement or take the place of other measures already mentioned and should be used with due consideration of the physical needs and rights of the child for ordinary content and comfort.

According to the gravity of the curves in their threat of increasing deformity, correction should be by means of a constant or intermittent correcting force and should vary in degree of the pressing or pulling force.

In the most threatening cases, comparatively rare in young children, correcting force should be applied to the patient in a recumbent position. Correction of the curves of the spine are more easily effected when the superimposed weight is removed. Recumbency can be borne for a longer time without discomfort than suspension and is therefore to be preferred when corrective methods are undertaken.

If the trunk of a full term foetus be dissected, permitting an inspection of the movements of the spinal column under varying conditions, it will be seen that curvature with rotation can be produced by pressing the neck down toward

the pelvis, provided the spinal column as a whole is not permitted to curve backward. It will also be noticed that side bending is possible to a considerable extent without a twist in the column owing to the elasticity of the cartilaginous intervertebral tissues.

Under certain conditions of crowding of the vertebrae with side bending, characteristic scoliotic curves are developed. These can be corrected by suitably directed correcting pressure or a pull and removing downward pressure.

In fully developed adult scoliotic spines the amount of force needed for correction would be great. In younger cases the amount of force would vary according to the extent and degree of the curves but the principle of the correction would be the same.

This consists both of side pressure upon the points of greatest convexity of the curves and counter-pressure at the opposite parts of the curved trunk.

In flexible foetal spines, direct pull upon the column, forced backward or forward bending, will obliterate the twist, but this effect is not so easily produced in developed curves. In these, direct pull upon the head or pelvis may change twists in the cervical and low lumbar regions unless structural changes have become pronounced, but in the dorsal regions this result is not to be expected. For correction of rotation correcting pressure on the ribs must be employed to overcome the spinal rotation. Manifestly all downward pressure on the upper part of the column must be removed if rib correcting pressure is to be effective. A combination of side pressure and counterpressure with front and back pressure and to an extent, direct traction with countertraction or recumbency are all needed in complicated curves. If enough force could be applied in these directions and borne, every spinal curve could be corrected, and by the same reasoning it may be expected that the less resistant curves can be so corrected. All that is needed is the suitable application of correcting force.

Correction must, in growing bones, be applied constantly and persistently for a long period to check continuous perversity in growth. This necessitates home treatment daily applied by means of appliance of easy adjustment and simple construction.

If a child lies on a board, either flat upon the floor or for the child's greater convenience, on a board raised at one end, and a short board pressed upon the front of the thorax, pressure to any desired extent can be made upon the distortedly rotated ribs by connecting the two boards at the sides by straps. The areas of pressure can be farther regulated by thick, firm pads placed on the areas needing pressure. A head-pulling sling and side-pulling straps attached to weights can be added to act upon the curves and to reduce downward pressure. The plane and angle of the pelvis can be changed by

flexing or straightening the thighs and by exerting a pull on one or the other of the legs if the limbs are kept straight, or if the thighs are flexed by attaching to the reclining board a seat on which the buttocks rest which can be made by suitable adjustment to exert more pressure on one buttock than the other.

The degree to which the correcting forces are to be exerted is a question to be decided in each instance. This recumbent correcting treatment can be made less tedious if the resting board be inclined so as to permit reading.

When intermittent correction seems inadequate and constant correcting pressure is needed and when the patient is about and also when in bed, correction can be exerted by means of a bivalve corset of celluloid or stiffened leather made from a properly applied plaster corset reaching from the neck to the pelvis and exercising correction on the spine as far up and as low down as possible.

Care and skill are required in the making and adjustment of this corset that there may be a minimum of discomfort and disfigurement when it is worn. This corset being removable and its pressure adjustable, its use is compatible with muscular exercises and free activity, according to the needs of the case.

As treatment to be effective must be protracted, the means employed should be as simple as possible suited for the capabilities of domestic nursing.

They need, however, careful and observant medical supervision at stated times to direct changes in methods used to note accurately improvement or the reverse.

If the spinal column is abnormally stiffened in its curves in any part of the spine and not flexible to any muscular contraction, it cannot be considered as rational treatment to attempt to strengthen the muscular group in question until the respective portion of the spine is restored to its normal flexibility. This, if due to ligamentous shortening, is to be accomplished by ligament stretching and not muscular exercises. Muscular exercises of the trunk or thigh muscles may be beneficial at all times, but should be carefully directed that they may not develop the muscles already sufficiently strong without benefiting those weakened owing to an abnormally stiffened spine. A safe rule in these cases is that all muscular exercises should be taken with the spinal column in as nearly a corrected position as possible.

In watching chronic cases of the nature of spinal curves when changes are necessarily gradual, it is necessary that the surgeon directing treatment should have more accurate data of the state of the curved spine than that furnished by his own recollections of the observed condition several months before.

Variations from the normal side flexibility curves can be used to indicate the portion of the spine needing treatment for overcoming local-

ized abnormal stiffness and the amount of success following measures used in treatment, giving greater precision to the surgeon's method and greater definiteness to his judgment.

It would be, if practicable, desirable to publish in a statistical form, or by more definite before and after treatment presentation of cases, the results of many years' experience in the treatment of spinal curves by different methods, but by the nature of the case the long chronicity of the affection, the unknown factor of natural improvement, and the many circumstances which check the benefit of treatment, statistics possible in the results in operative surgery are less trustworthy if dealing with spinal curves.

To any one who has studied the subject and witnessed the great increase in the knowledge of the subject in the last forty years it is evident that the surgical world has passed through the period of clumsy and futile treatment of little understood distortions to a stage where definite improvement can be expected to follow persistent rational corrective measures. The advantage of effective and not too irksome preventive measures in the curvatures of growing children is evident. When many treated cases have been watched from childhood to strong manhood or to motherhood there can be no doubt as to the advantages of proper corrective measures over expectant or spasmodic or ineffective methods.

Success can be expected in preventing the development of fixed curves in growing children threatened by faulty habitual attitudes, the checking of progress, and in some cases correction of already established curves.

With proper attention on the part of the parents, school authorities and physicians, it may be expected that future generations will have better carriage and straighter backs than are at present seen among school children.

SPINAL FLEXIBILITY.

BY E. H. BRADFORD, M.D., BOSTON.

If the spinal column from a dissecting room cadaver or if the vertebrae of an adult skeleton are articulated in such a manner as to simulate the natural condition, certain curvatures and limitation in the movement of the whole spinal column are to be observed. This condition of fixed curves or of restricted movement is not found to the same degree in the spinal column of a full term foetus owing in part to the greater cartilaginous structure in the bodies of the immature spine and the greater elasticity of the articular facets and ligaments. The foetal or new born infant spine may be said to have no curves and to be movable with considerable flexibility in directions which in adult spines meet resistance.



FIG. 1.—Contour tracing and tracing of lateral flexibility of spinal line in a normal child showing greater lateral flexibility to the left side.



FIG. 2.—Contour tracing and side flexibility of the spinal line in an infantile paralytic showing change in lateral flexibility.



TRACER.

a. Levelling pendulum.

b. Block; hole for pencil.



a. Patient.

TRACING: SIDE FLEXIBILITY.

b. Board holding paper for tracing.



TRACING: SIDE VIEW.



TRACING: LATERAL FLEXIBILITY.

In the study of pathological curves a knowledge of flexible spines is needed.

If a full term foetal torso is examined it will be seen that the osseous structure of the verte-

brae of the spinal column is considerably less than in a developed spine, and the same will be found to be true in a growing child in extent corresponding to the osseous development. There will be a corresponding greater amount of spinal flexibility in the column in proportion to the amount of cartilaginous structure in the vertebrae. It is of interest and importance to determine the limit of normal side flexibility in the most flexible spine as well as in each individual case presented for examination.

If the thorax of the foetal torso is opened and the lungs and heart removed and pins inserted in the vertebral bodies, the amount of possible bending of the column without causing vertebral rotation, the most distorting strain on the column can be noted and also whether pressure on the ribs in the back will cause a twist of the column.

It will be seen that in a flexible spine pressure on the ribs on one side in the back will twist the spine at the corresponding portion of the column. It is also to be observed that in a straight spine twisting the column at either end



Lateral Curvature Brace and Spinal Straps (Front).



Lateral Curvature Brace and Spinal Straps (Back).

causes rotation at the end twisted, but not in the middle.

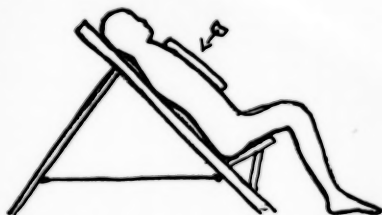
Furthermore, if the spine is arched backward pressure on the top of the column down toward the pelvic end does not cause vertebral rotation, while this pressure does if the spine is bent forward. Side bending does not cause vertebral rotation if the column is bent backward.

The significance of these facts in determining the causation of rotation distortions in the trunk is evident. A spinal column kept straight or bent backward does not twist from superimposed weight, while if bent forward there is danger if the column is overloaded of a twisting strain which, in case of structure inability to resist, will cause distortion if the strain is continuous, especially in the less flexible portions of the column less able to relieve themselves by backward bending, of constant distorting strain.

In cases of curvatures of children under observation it is desirable that the flexibility of the different parts of the column be examined and noted, as well as any abnormality in the spinal curves. Simple means of determining both the curves and the spinal flexibility are desirable,



Self-Correcting Stretching Exercise for Stiffened Curves.



Reclining Board with Front Pressing Board for Twisted Curves.

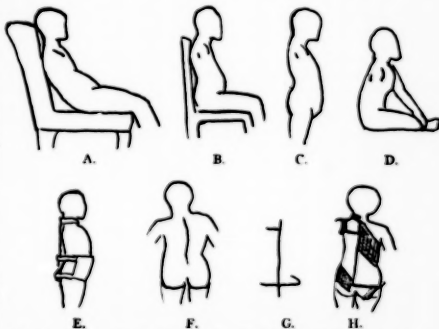


FIG. A, B, C, faulty sitting and standing attitudes; D, trunk contour in floor sitting; E, check-rim brace in round shoulders; F, lateral curve; G, light steel brace; H, spiral webbing and strap applied to give correcting pressure.

and can be furnished with sufficient accuracy. Various devices have been employed for tracing variations in the spinal lines, *i.e.*, the marked skin line over the projecting vertebral spines, as well as of the contours of the trunk. Simple arrangements for the purpose have evident advantages, and can be made by attaching a tracing pencil at one end of a short light rod in such a way that the pencil maintains the right angle position to the tracing paper and that the rod can be held at a level while the pencil is passed over the line to be traced, *i.e.*, the line of

the spines or any section or contour of the trunk. The pencil-holding end of the rod will mark a traced line on a paper pinned on a board at the side of the sitting, standing or stooping patient.

In tracing the sides of the trunk an accurate record can be made if the patient stands back against the board and the tracing pencil (placed in a holder to keep it at right angles to the tracing plane) is passed along the patient's sides.

There are several other methods of tracing back curves; the simpler one described appears to be the most generally serviceable. When the flexibility of the spinal column is to be noted the patient is bent to one side and the other alternately and steadily in the required position. Although antero-posterior tracings can be made and are important, yet in studying beginning or threatening twists the side flexibility seems of the most value as a premonition of possible rotation, through faulty weight-bearing. There will be found much variation not only in the lack of symmetry in the side motions in an individual, but also in the location of the centers of greater side flexibility in different individuals. These variations may in flexibility tracings be regarded as the result of variation in habitual attitude or variation in growth in children.

In many instances they may be within what may be called normal physiological limits. In others they may approach the pathological.

A study of the flexibility of the infantile spinal column compared with the localized restricted mobility in definite parts of the column in the adult is an aid to the investigation of the problem of the causation of spinal curves. To this should be added some knowledge of the changes in the skeleton as the animal develops from the quadruped to the biped. The spinal column in the quadruped is supported on four legs and is little exposed to the twisting side strains of ambidextrous, erect, moving man. The animal quadruped is also freed from the strain upon the column of the superimposed weight of the head and upper trunk. In the bipedal bird the symmetrical action of the wings prevents unequal side strains on the column and those of superimposed weight are diminished by the oblique inclination of the spine and the small size of the head. The quadrumana are not erect and their arboreal activity hanging by the arms protect the column from distortion from superimposed weight.

In man as soon as he assumes the erect attitude, emerging from the infantile stage of ereeping activity, the spinal column is exposed to strains not occurring in other animals, and for which the normal spinal column must become adapted in its skeletal form and its muscular and ligamentous strength and elasticity.

The sacral end of the spinal column is firmly attached to the pelvis and but little mobility exists at the articulation of the last vertebra and the top of the sacrum; forward and back or

side movements in the column take place at a short distance above in the lower lumbar region. In the quadruped the pelvis is roughly at an obtuse angle with the line of the spinal column. In the floor seated infant the pelvis would be at right angle with the spinal column, provided the spinal column was supplied with sufficient muscular strength to sustain the head and trunk weight without bending under the load. In the standing position, however, the pelvis inclines downward at the front, and this inclination pulls with it the last lumbar vertebra, giving a lumbar forward arching and a resulting compensatory curve above. The extent of these curves depends upon the muscular strength and the tensile power of the ligaments holding the vertebrae and the column to the pelvis.

The surgeon in examining and in treating spinal curves will find tracings as described of much assistance in determining the existing condition in a given case, the prognosis, and in the needed method of treatment.

THE ELECTROCARDIOGRAPHIC SIGNS OF CORONARY THROMBOSIS AND ANEURYSM OF THE LEFT VENTRICLE OF THE HEART.*

BY MORRIS H. KAHN, M.A., M.D., NEW YORK CITY.

IN order to understand the changes that take place in the electrocardiographic records of cases of coronary thrombosis, it is necessary, first, to set definite limitations to the normal electrocardiographic picture.

The electrocardiogram traces the course of the conduction current through the heart, beginning at the sinus node in the right auricle through the auricular wall, the a-v node, the junctional tissues, the bundle of His and its branches, and via this structure throughout the ventricular wall. This gives normally a characteristic picture.

First, comes an auricular wave, designated as "P," of an average duration of 0.12 of a second. Then, an iso-electric period follows; the conduction current reaches the ventricular muscle and gives rise to the QRS wave, lasting normally up to 0.1 of a second. After another iso-electric interval, the T wave, which is considered to indicate the deactivation of the ventricle, takes place.

This normal picture may be influenced not alone by organic changes in the heart, but by functional changes as well. These may effect the sinus node, producing fibrillation of the auricle; the auricular wall producing auricular extrasystoles; the a-v node producing abnormal rhythm; the bundle of His producing heart block; or the ventricular muscle producing ventricular extrasystoles. These changes may also be due in part to organic causes.

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A lesion at any point in the ventricular heart structure will affect either its irritability, conductivity, contractility, or rhythmicity. Affecting irritability, extrasystoles would result from the points of hyperirritability; affecting contractility, variations in voltage and alternation in the force of contraction might occur; and disturbed rhythmicity would give irregularity of the heart.

The important point in the differentiation is to ascertain whether the basis for the change is organic. Minute organic changes, unless they affect the conduction mechanism of the heart, are not yet able to discover with certainty. When the changes are such as would result from coronary thrombosis, they are more or less distinctive and amenable to careful analysis of the electrocardiogram.

For a better understanding of these changes, it is desirable to be acquainted with the main vessels of supply to the heart itself.

The heart is supplied by the right and left coronary arteries arising from the sinuses of Valsalva just above the semilunar valves. The left coronary artery is the more important, being the more likely to thrombose or occlusion. It courses in the left ventricular groove to supply the anterior wall of the left ventricle, the anterior papillary muscle and the left half of the thickness of the interventricular septum. Its circumflex branch turns posteriorly in the auriculo-ventricular groove supplying the posterior wall of the left auricle and of the left ventricle, the posterior papillary muscle and part of the septum. The right coronary artery runs along the right or posterior interventricular groove and supplies the right ventricle over its main extent. Its circumflex branch continues forward around the right side of the heart, supplying the right auricle.

From a practical clinical standpoint, we may consider the coronary endings as terminal arterioles. Though the capillaries may anastomose slightly when a coronary branch is occluded, the anastomoses are not sufficient to maintain such adequate nutrition of the heart as to prevent the development of symptoms.

The changes that can occur when the coronary vessels are occluded are those of anaemic infarction and necrosis. At first, such a lesion is distinctly inflammatory and, therefore, a source of irritation to the heart muscle, producing hyperirritability of the heart at that point. This would result in premature beats or a series of premature beats producing paroxysmal tachycardia. As a matter of fact, coronary thrombosis is very often followed by an attack of paroxysmal tachycardia, as will be illustrated by one of our cases to be reported.

The lesion continues to progress with destructive changes, increasing the difficulty for conduction.

When these changes involve the special fibers of conduction, a certain degree of blockage to the conduction current takes place in the ven-

tricular muscle. In the electrocardiogram, this is manifested as an increase in the Q R S period, which may extend to 0.2 of a second; *i.e.*, the conduction current, not finding a clear course through the branches of the bundle of His, must traverse the ventricular muscle and its connective tissue, and the latter offer much more resistance than the specialized fibers. This increase in the Q R S period becomes a significant feature of the electrocardiogram in coronary thrombosis.

The degenerative changes continue. If the coronary thrombosis involves the apex of the heart, as it frequently does, connective tissue may entirely replace the muscle with thinning and dilatation of the ventricular wall. This produces a not very uncommon lesion, an aneurysm of the wall of the left ventricle. Aneurysm of the left ventricle, therefore, being commonest at the apex of the heart, will give a more or less distinctive picture in the electrocardiogram.

Low voltage with preponderance of the left ventricle and slight widening of the Q R S wave, and these features progressing with the progress of the lesion, are the findings in this condition.

There is not that extensive notching of the Q R S wave or the high voltage as takes place in lesions involving the septum itself.

Extrasystoles may occur in this condition, depending upon the progress of the lesion in the boundary zone of the aneurysm where it joins the normal tissue.

The "T" wave also shows quite characteristic changes with thrombosis of the coronary artery. Experimentally, ligation of the descending branch of the left coronary artery produces characteristic alteration in the "T" wave. Immediately following the ligation, the "T" wave becomes more prominent, varying in height with the size of the ligated branch. It then becomes sharply negative and, after several days, it gradually becomes positive again, first in lead III and last in lead I. After a number of weeks, it again becomes iso-electric or negative and remains so until death. These changes are undoubtedly associated with the progress of pathologic changes in the infarcted area.

This change of the "T" wave from a strongly positive peak to a markedly negative one, and then a slow return to the positive or iso-electric form is so characteristic experimentally that similar changes in the wave in man may reasonably be supposed to be due to similar lesions in the left coronary artery.

It is, therefore, important in cases of suspected coronary thrombosis not to confine oneself to a diagnosis from a single record, but to take records repeatedly. What may be found more important than the analysis of a single record is the variation in the electrocardiographic picture with the progress of the lesion.

Ventricular extrasystoles and paroxysmal tachycardia early in the cases, with blocking of the conduction current in the ventricular muscle and progressive changes in the "T" wave are

the possible pictures in coronary thrombosis. These can be illustrated, in brief, by the following three cases and their electrocardiograms.

REPORT OF CASES.

CASE 1.—S. Z., Russian, aged 58 years, complained of dyspnoea on exertion of five to six months' duration and cough and expectoration. He had severe cardiac pain and an attack of paroxysmal tachycardia, for which he was admitted to the hospital.

The physical examination showed slight congestion of the pulmonary bases and marked dilatation of the heart to the anterior axillary line. Its action was extremely rapid and regular. The respirations were labored, 36-40 per minute, and the temperature was slightly elevated.

Laboratory Observations.—The urine showed a considerable amount of albumin. The Wassermann test was negative. The blood showed 10,000 leukocytes and 76% polynuclears. Pericardial fluid aspirated contained 60% polynuclears and 40% mononuclears.

Polygraphic Studies.—The jugular wave was of the venous type, as is usual in paroxysmal tachycardia. The radial showed distinct pulsus alternans.

Electrocardiographic studies were made repeatedly and showed left ventricular preponderance and paroxysmal tachycardia of ventricular origin. The rate was 168. Moderate ocular pressure did not affect the heart mechanism. (Fig. 1.) Roentgen ray studies revealed a marked

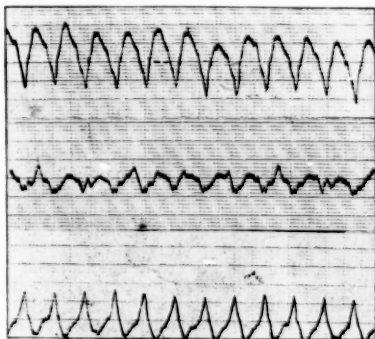


FIG. 1.—Paroxysmal tachycardia of ventricular origin due to coronary thrombosis. (Case 1.)

enlargement of the cardiac shadow, especially the left ventricle.

CASE 2.—Z. M., Austrian, aged 51 years complained of shortness of breath and was seized with pain over the upper portion of the abdomen, which radiated to the chest and which was accompanied by marked dyspnoea.

Physical examination showed the heart enlarged to the left. The apex was in the sixth space. The sounds were weak and of poor

muscular quality. There was evidence of marked mitral and tricuspid regurgitation. There was prominent pulsation of the veins of the neck, and the liver was also felt pulsating just above the level of the umbilicus. Respirations were labored and the pulse was weak. Effusion into the right chest showed signs of right failure.

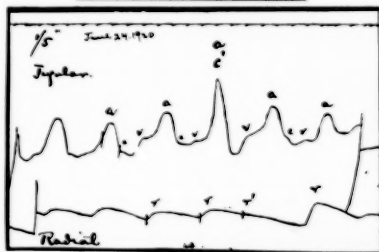
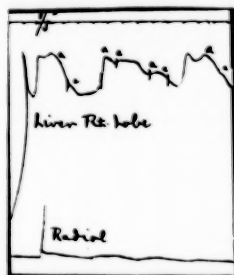


FIG. 2.—Polygraphic tracings of the radial with pulsating liver (above) and radial curve (below). The hepatogram shows the ventricular form of liver pulse (tricuspid regurgitation). The phlebogram presents the normal sequence of waves, a, c, v, with perhaps increase of the a-c interval. The fourth cycle in the jugular tracing is a nodal extrasystole with superposition of the auricular and ventricular waves; this is followed by a complete compensatory pause.

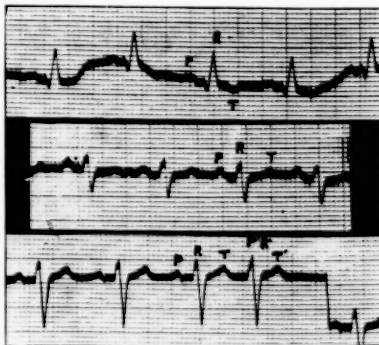


FIG. 3. Case 2.—The voltage is a little less in this record than before. The T wave in lead III is upright in this figure, but it became negative later. A nodal premature beat is shown in lead III.



FIG. 4.—Descending branch of the left coronary artery in Case 2 near its orifice, showing calcareous deposits and thickening of the wall.



FIG. 5.—Almost complete obliteration of the lumen of the descending branch of the left coronary artery in Case 2, due to thrombosis.

The patient died with sudden cardiac exhaustion four months after the onset of the symptoms.

Laboratory Observations.—The Wassermann test was negative. The blood showed a slight secondary anemia and a slight leucocytosis of between 9,200 and 13,600 cells per cu.mm.

Polygraphic studies showed tricuspid regurgitation and pulsating liver, and also occasional ventricular premature beats. (Fig. 2.) Electrocardiographic studies repeatedly showed left ventricular preponderance and low voltage in all three leads, which became still lower before the patient died. The Q R S wave was notched

and widened in all three leads to 0.12 of a second; this was most evident in lead II. The "T" wave was inverted in lead I throughout and continued from the "S" phase without any iso-electric interval. Toward the end, it became less distinct and almost iso-electric in leads II and III. There were occasional bundle and nodal extrasystoles. (Fig. 3.) Autopsy findings revealed a much enlarged heart, with an old patch of pericarditis. The wall of the left ventricle was very thin and gradually tapered down to the apex, where the wall was only about 1 mm. thick. Here the muscular tissue was almost completely destroyed. Large plaques of firm connective tissue were visible throughout the wall, and especially on the septum. The mitral and tricuspid valves admitted three fingers easily. The coronaries showed partial obstruction, with calcareous deposits on the wall. (Figs. 4 and 5.)

CASE 3.—R. N., woman, 46 years of age, who complained of dyspnoea and sticking pains in the chest, especially on lower sternum. She appeared extremely weak; her face showed a peculiar sallow leaden pallor and an expression of anxiety and suffering such as is commonly seen in angina pectoris.

The physical examination showed neither enlargement of the heart nor murmurs at first, but the sounds were feeble. The respirations were labored, and bilateral pleural effusion developed. Sudden death occurred five months after the first symptoms.

Laboratory Observations.—The Wassermann

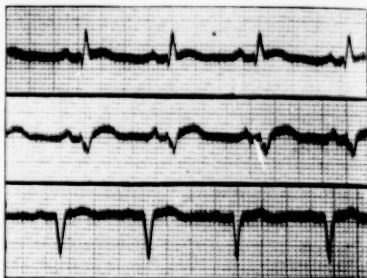


FIG. 6. Case 3.—The Q R S wave here shows increased notching and thickening in lead II, with increased widening to 0.12 of a second. The T wave is less prominent than before, is almost iso-electric in lead I, but shows the same peculiar S-T transition in all three leads. This record shows greater voltage and greater preponderance of the left ventricle than before.

test was negative. The blood showed a moderate degree of secondary anemia and a slight leucocytosis; at first, 10,000 leucocytes per cu. mm., and towards the end, 16,800 to 20,800 per cu. mm.

Electrocardiographic studies showed very low voltage and preponderance of the left ventricle, which increased with the course of the illness. The Q R S wave was slightly notched, thickened and widened, and became more distinct with the progress of the lesion. The "T" wave was at first inverted in lead I and fell directly from the descending or catacrotic arm of "R" before the latter had reached the iso-electric level. Later it became less prominent and almost iso-electric



FIG. 7.—Section of descending branch of left coronary artery in Case 3 near its origin, showing a mural thrombus with beginning organization.



FIG. 8.—Section of descending branch of left coronary artery in Case 3 in its course, showing the extension of the thrombus murally into the branches of the vessel (one to the right and one to the left).

in lead I. Throughout, the electrocardiograms gave evidence of rapidly progressing myodegenerative changes in the left ventricle. (Fig. 6.)

Autopsy findings revealed an enormous heart and shaggy pericardium as a result of old tough lesions. The right ventricle occupied a comparatively small area, but the left ventricle was enormously dilated. The apex wall had been thinned to the thickness of blotting paper. The endocardium had been undermined by dissecting thrombus and the apical muscle was completely transformed into connective tissue. A huge, ovoid, laminated, hard white clot firmly attached to the septum almost completely occupied the ventricular cavity. The aortic ring showed marked atheroma.

The coronary artery admitted a medium-sized probe for a distance of $2\frac{1}{2}$ cm. Beyond

that, the anterior or descending branch of the left coronary was completely occluded. (Figs. 7 and 8.)

COMMENT.

These cases, corroborated by autopsy findings serve as examples of the effects of sudden and progressive occlusion or thrombosis of the coronary artery. In the first case the infarction was acute and the myocarditis terminal. In the last two cases, the myocarditis was a rapid, progressive, degenerative condition with the formation of aneurysm and autopsy findings of great interest.

Two of these cases are included elsewhere in a clinical discussion of the subject of "Aneurysm of the Left Ventricle."¹ They are here given in their special relation to the electrocardiographic signs of coronary thrombosis.

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THE ROENTGEN RAY TREATMENT OF ACNE VULGARIS.*

By RUDOLPH JACOBY, M.D., BOSTON.

A SURVEY of the most recent literature shows that in the opinion of most dermatologists and roentgenologists the Roentgen rays constitute practically a specific treatment for Acne Vulgaris.

There are a number of clinical varieties of Acne Vulgaris, and a knowledge of the effect of

roentgenization of the various types of the disease is necessary in order properly to select patients for this treatment. It is of equal importance that modern apparatus and technique be used, and that a thorough knowledge of the biochemical and biological effects of the Roentgen rays be possessed by the operator.

All types of Acne Vulgaris have certain features in common. The disease is most commonly encountered at or about the age of puberty. It is very common in adults. The site of predilec-

*Read before the Althean Club, Boston, December 17, 1921.

tion is the face, although it frequently attacks the back, the back and sides of the neck, the chest, shoulders, and arms. The disease is an inflammatory condition occurring in and around the sebaceous glands, and is characterized by comedones, papules, pustules, and nodules.

The predisposing causes of acne are varied and many, and, as Martin aptly states, it may be produced by almost anything from indigestion to a state of exalted self-consciousness. However, the actual cause is the *Acne Bacillus* which is invariably present in all acne lesions. This bacillus was first described and named by Unna in 1893.

Most investigators believe that the earlier lesion, that is, the small papule, results from the infiltration of plasma cells, giant cells, mast cells, and fusiform cells about the outlets of the sebaceous glands. As the infiltration continues and the entire gland and later the hair follicles are surrounded by the infiltrating cells, a large papule and finally a tubercle are formed. At times several glands and follicles may be involved in one lesion.

When suppuration sets in, leucocytes appear and the glandular structure is destroyed. In some cases the destructive process also involves the hair follicles, and small dermic abscesses may be formed. Semon states that a periglandular fibrosis occurs that is often exceedingly dense. This fibrosis, he feels, protects the bacteria lying within the glands from the action of vaccines.

Of the more common varieties of acne, namely, comedo, acne papulosa, acne pustulosa, acne erythematosa, and acne indurata, only the erythematous type does not well tolerate roentgenization.

It is neither necessary nor advisable to treat every case of acne with the Roentgen rays. The proper application of various internal and external remedies, together with hygiene, will suffice to cure a great many of the cases. However, these cases may be regarded as too trivial to make Roentgen therapy necessary. In the more severe cases it is difficult to obtain the complete co-operation of the patient in carrying out the campaign of home treatment. Details are neglected, and if improvement does not occur rapidly the patient is apt to become discouraged and frequently makes the rounds consulting other physicians in hopes that an easy and quick method of cure may be found.

The Roentgen rays, if properly applied and combined with other means of combating the disease, offer a treatment that is associated with safety and prompt and permanent cure. Roentgen therapy obviates the necessity of using local remedies that are temporarily disfiguring and troublesome, and it usually effects a cure in three to four months, providing that the patient receives proper advice and treatment. The percentage of cures reported is very close to ninety per cent., and the percentage of relapses, which are very amenable to treatment, are small, probably not greater than five or six per cent.

In 1896 Ullman reported the first case of acne vulgaris cured by the Roentgen ray. A few more cases were reported between this time and 1900, immediately following which numerous reports began to appear in the literature. Many of these references are given by Pusey and Caldwell.

In these early days the dosage varied amongst the investigators from large erythema doses to the small divided dose. The results were very variable, and many accidents, serious complications and sequelae followed. This was in the days of the cranky gas tubes in which accurate control of constant quality and quantity of the x-ray was impossible.

Within the past six years, due to the pioneer work of MacKee and others, the development of the Coolidge tube and standardized apparatus, a technique has been developed which in competent hands is safe and effective.

Satenstein and Remer in their work on dosage from the pathologic point of view have found that normal tissue elements are more resistant than the pathologic. They state that the resistance varies according to the age of the person, the part of the body, and the type of tissue of which they are a part. The intensity and duration of the response of the cells to Roentgen rays are in proportion to the degree of their resistance, that is, the response is most intense and of longest duration in the cells of least resistance. After Roentgen ray exposure, the resistance of all cells is influenced, and their activity is proportionally affected. The more resistant cells recover in less time than those of less resistance. If the interval between the exposures is sufficiently long, all the cells will recover. After the second exposure, the activity of the cells that have not fully recovered is more readily affected, as their resistance has already been influenced. With each successive exposure the resistance is more and more influenced and the activity is proportionally less and less maintained. When the cumulative effects at the point of saturation are reached, the cells become non-resistant and inactive. (The rapidity with which the point of saturation is reached depends on the character of the cells and the intensity of the exposures). At this stage involution sets in, that is, the non-resistant and inactive tissue elements are unable to withstand the action of the local tissues assisted by the body's protective forces, and are absorbed. If involution is within bounds, normal absorption results, otherwise atrophy or ulceration may occur.

As the intensity and the duration of the response to the Roentgen ray are in proportion to the resistance, the pathologic cells will not have recovered to the same degree in the same time.

Chronic inflammatory tissues are characterized by the presence of fibroblasts (connective tissue cells). They are more resistant and less readily influenced than the lymphocytes (round cells) which characterize acute and subacute inflammatory tissue. Therefore, the best results to be

obtained in chronic inflammatory tissues is by the use of fractional doses.

As it were the agent, but the response of the living cells to the agent that is responsible for therapeutic results, the least amount of rays necessary to produce these results in any given tissue should be employed.

In treating *acne vulgaris* by Roentgen ray, a standardized apparatus consisting of an interrupterless transformer, rheostat control, standard Coolidge tube, Coolidge transformer and control, and a milli-ammeter must be used. The dosage is measured in skin units. The experiments of Remer and Willoughby show that a three-inch spark gap and three milliamperes of current given for four minutes at an eight inch distance delivered the amount of ray corresponding to four Holzkecht units; namely, four numbers on the Holzkecht radiometer.*

Four Holzkecht units, that is, four numbers on the Holzkecht scale, correspond to one skin unit, which is a sub-erythema or epilating dose. On the basis of their experimentation they devised a formula which has become known as the national formula for cutaneous therapy. The strength of the ray varies inversely as the square of the distance.

The present accepted technique in the treatment of *acne* is to give fractional doses of one-quarter skin unit (one Holzkecht unit) weekly for from ten to sixteen treatments. This number should be used even though all symptoms have disappeared following only a few treatments. It is very seldom that patients cannot tolerate this dose.

In some young females with fair, finely textured, highly colored skins, and in some cases of *acne erythematosus* also, low toleration has been found. In these cases a smaller dose is given, that is, one-eighth skin unit.

The question of idiosyncrasy is often brought up, but most authors deny this possibility and explain poor results by errors in dosage and imperfections in the methods used.

One quarter skin unit is given once a week to each side of the face. In doing this there is ordinarily enough overlapping to cover the front of the face, but if there are many lesions on the chin and forehead, it may be necessary to give an extra one-eighth skin unit to these areas. The hair, eyes, and eyebrows are to be protected by lead foil. In treating the back and chest, slightly larger doses may be given. By giving this amount at these intervals an erythema dose is never administered since the effect of the first treatment has gone entirely before the next one is given. If there is the slightest sign of erythema, the dose is not repeated until its disappearance indicates normal tissue recovery. The presence of erythema is judged by noting the border between the area treated and the shielded skin about the eyes. This must be noted in clear natural daylight.

*This is the indicator of a color test dependent upon the coloration of disks of platinum-cyanide of barium by the x-rays.

It is unnecessary to use any local treatment, and patients must be cautioned about the use of any soaps or salves containing drugs such as chrysarobin, iodine, salicylic acid, tar, mercury, resorcin, scarlet red, chloral hydrate, or sulphur for a considerable time before or after treatment because of the fact that these substances render the skin more susceptible to irritation and burn.

Autogenous vaccines are frequently used by some as a supporting treatment, but most authors feel that this procedure promises nothing.

As in any disease it is also necessary to control any underlying factors such as focal infection, etc., when possible to do so. Regulation of diet and relief of constipation are frequently necessary, and scalp conditions which are usually associated with *acne* must be treated.

All potent therapeutic measures are dangerous in unskilled hands, and the x-ray is no exception. However, with caution, good judgment, and modern apparatus and technique, the Roentgen ray treatment of *acne vulgaris* is not only the best method, but a perfectly safe one.

None the less, we hear a great deal about complications and sequelae. Telangiectasis and atrophy can occur only from over-dosage. This is so rare that it scarcely needs mention, but the following complications warrant a few words:

Dryness of skin:—The skin may become dryer than normal during treatment so that it is easily irritated by wearing apparel, etc., or too frequent washing. This condition is readily controlled by a simple ointment and is only transitory.

Freckles:—Some brunettes show various degrees of pigmentation, but this condition is evanescent, although for the time being it is annoying to the patient.

Pitting:—It is generally conceded that this is a psychological matter; that the pits are due to the disease itself and as the disease clears up, the pits simply become more conspicuous.

Superfluous hair:—In so far as superfluous hair and *acne* are both due to an abnormal condition of the pilosebaceous gland system, we frequently observe the two conditions together. It will also be noted that usually the hair complained of is most marked under the chin where practically no treatment is received.

Conclusion:—The use of the Roentgen ray in *acne vulgaris* is the best treatment we possess, and in the hands of an operator who follows modern measured technique, and who is careful to keep his apparatus in good working order, is perfectly safe.

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Book Reviews.

The Heart as a Power-Chamber. By HARRINGTON SAINSBURY. Oxford Medical Publications, 1922. 248 pp.

This book takes up the subject of the heart and circulation from a somewhat novel point of view. The particular emphasis is on the mechanical side of the circulation with a discussion of hydraulic principles. Although this idea is a laudable one, there would seem to be no excuse for the publication of such a book as this proves to be. A brief article of a few paragraphs or of a few pages at the most would have more than sufficed to cover the ground.

The book is easy to read for there is little technical detail mentioned in it, but it grows very tiresome as a result of repetition and wordiness. The English at times is very quaint and reminds one of medical works written centuries ago, but the very quaintness of style does not excuse the vagueness and inaccuracy of the book.

There seems to be an attempt in this book to express a reaction against some of the more modern work on the circulation. This is, however, simply an attempt, because no proof is given that this modern work on the heart is not of far greater importance than most that has preceded and for which the writer of this work seems to be the champion. For example, there is a constant harping on the back pressure theory, which had been for years one of the bugbears in medicine but which now, in the light of more recent work, we thought had been dissipated. Once in a while there is a useful observation such as that concerning the relationship of the velocity of the blood stream to the cross section area of the circulation on page 90, and the diagram on page 93 illustrating the blood circuit. In the main, however, the information to be derived from the book is very little and may be typically represented by the following two paragraphs quoted, the first from the preface and the second from the chapter on Treatment, which chapter, by the way, barely mentions digitalis and gives no direction for its proper use, and praises the administration of such drugs as strychnine, camphor and eserine as cardiovascular stimulants.

"And what are we to say of design, that other salient feature which the study of struc-

ture brings out? This at least, that the more we look at it and into it, the more does its supreme art appear, and nowhere more so than when we search the chambers of the heart. Well may Borelli call this organ 'hanc mirabilem structuram,' and well may William Blake, the mystic, innocent of science and all its ways, exclaim in that strange poem, 'The Tiger':

'And what shoulder, and what art
Could twist the sinews of that heart?'

Whence came the inspiration which thus spoke, and whence the insight?"

"The first aphorism meets us at the very portals of the temple of Aesculapius, and like a solemn introtit conducts its votaries across the threshold. It tells of the brevity of Life, and of the interminable pursuit of Art (life's task); it tells with unerring directness of the urgency of the Moment, that is, of the swift passing of Opportunity's escaping forelock. The next pronouncement cries halt, despite all the need for haste which the crescendo argument has developed up to this point; for now it bids us pause and consider that Experiment is hazardous, in that, apart from the peril of active intervention, we may perchance thwart the healing powers of Nature; and, again, that Judgment is difficult, not to say fallible. The problem thus confronted, there follows as a corollary the immediate practical deduction which must be acted upon without delay, yet without undue haste, having first given the mind time to visualize the problem in its entirety and to consider the vantage point of Opportunity, in time and place: the second half of the aphorism embodies this conclusion."

"Explicit." ???

1. *History of the National Tuberculosis Association.* By S. ADOLPHUS KNOPF, M.D. National Tuberculosis Association, New York.

In this volume Dr. Knopf has brought under one pair of covers a remarkably large and accurate amount of information. The story of the tuberculosis campaign in this country has been a striking one of tremendous progress, not without its romantic and even its tragic sides. Dr. Knopf has undertaken a great task, which he has accomplished well in the present volume. The book is a large one of nearly 500 pages, but attractively gotten up, well printed and arranged.

The first part describes the early history and development of the National Tuberculosis Association, devoting especial attention to its organization, early problems, the tuberculosis Christmas Seal campaign and the Framingham Demonstration.

In the second part is a brief summary of what took place at the seventeen annual meetings of the National Tuberculosis Association which have thus far been held.

The third part consists of 49 biographies, with photographs, of the officers of the Association.

In addition there are three appendices:—

I—describing anti-tuberculosis work during and after the World War;

II—a list of publications of the National Tuberculosis Association;

III—which the reviewer is frank in admitting that it might with better taste have been omitted—a list of Dr. Knopf's writings. Exactly why he chose to include these in a history of the National Tuberculosis Association, with which it is not fundamentally concerned, is not easy to see.

The book, however, is a valuable contribution in that it presents a permanent record of one of the great movements toward the betterment of mankind.

Smell, Taste, and Allied Senses in the Vertebrates. By G. H. PARKER, Sc.D., Professor of Zoölogy, Harvard University. 192 pages. 37 illustrations. J. B. Lippincott & Company. Price \$2.50.

This book is one of the series of monographs on experimental biology edited by Jacques Loeb, T. Y. Morgan, and W. J. V. Osterhout. The writer presents, in a clear and readable style, a summary of all that is now known about these senses. The discussion of the details of the process whereby olfactory and gustatory sensations are aroused is particularly interesting. The book should be valuable as collateral reading in courses in physiology and psychology, and is well worth reading for its own sake, because it adds to one's store of general information.

A System of Clinical Medicine. By THOMAS DIXON SAVILL, M.D. 6th edition, 951 pages. Wm. Wood & Co., New York. 1922. Printed by Wm. Clowes & Sons, London and Beccles. 16mo.

A helpful and practical work on clinical diagnosis, prognosis and treatment, better known in Great Britain than in America. Etiology, pathology and the laboratory aspects of diagnosis are included. This sixth edition has been carefully revised and is up to date. As stated in the preface, this book differs from many current textbooks of medicine in that it approaches the subject from the point of view of symptomatology; thus differential diagnosis is a prominent feature. A vast amount of information is compressed into the volume, so that it serves as a guide to all aspects of clinical

medicine. However, in many instances, the information given comprises but useful hints so that other literature must be consulted to obtain desirable results.

There are four plates in colors and one hundred and seventy-two figures in the text. Such illustrations in most textbooks are unsatisfactory and those in this manual are no exception to the rule. However, the printing and publishing aspects of the book are pleasing.

Dr. Savill's book will fulfill many practical needs of the general practitioner and student, and if one is to have in his own library but a single volume on clinical medicine, this book would be a good choice.

The Place of Version in Obstetrics. By IRVING W. POTTER, M.D., F.A.C.S. With 42 illustrations. C. V. Mosby Co., St. Louis, Mo.

In this book of 130-odd pages, Dr. Potter has written a review of the early history of version, bringing it up to the present time. The main interest in the book and the real importance it has to the medical profession is his account of his so-called method of version.

Chapter four contains the author's technique of version. This chapter is to all intents and purposes a reprint of his article which appeared in the *American Journal of Obstetrics and Gynecology* for March, 1921. It contains the same photographs, with a few drawings added.

The reviewer will admit at the outset that Dr. Potter does the best version he has ever seen. His technique is interesting to see and in many instances physicians will profit by following it in doing a version. That the technique which he has developed is alone his, the reviewer can not agree with. It has been taught before that both feet should be brought down, it has been taught that the anterior arm should be delivered first, and more than one physician has elected to end labor by an elective version. But the reviewer knows of no physician who has taken the stand that every woman, if the physician can get to her before she delivers herself, should have a version performed upon her. Dr. Potter subjects every woman that he can to a version. Those that he can not deliver by version he does a Caesarean section on, with the result that in the last year, out of 1130 women that he delivered, 938 were delivered by version, and 100 by Caesarean section. Dr. Potter states that the procedure in competent hands should be attended with no maternal and a very small fetal mortality. Further on he says that the operation must at all times be done *only in properly selected cases* (his italics), and he quotes "The Potter version can be taught to students. It is easier to teach than the use of forceps." This last quotation is from an article by Rucker on "The Potter Version," published in the *American Journal of Obstetrics*

and *Gynecology* for March, 1921, and the fetal mortality in this series of cases ran from twelve to eighteen per cent.

This is what the reviewer feels will happen if the Potter method of delivery becomes widespread throughout the country. The mortality rate will rise and serious damage will be done to the children and to the mothers. Dr. Potter's only indication for performing a version is that he gets to the patient before she delivers herself. It is a dangerous teaching to put broadcast throughout the country, and it is in order to try to stop this wave of operating enthusiasm that the reviewer writes as he does.

Current Literature Department.

ABSTRACTORS.

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DEFECTS IN SCHOOL CHILDREN.

BRUCE, R. (*British Medical Journal*, August 26, 1922), discussing defects of school children, comments on the fact that out of 15,000 school children examined there was no definite evidence of pulmonary tuberculosis and only seven suspected cases. This applies to definite tuberculosis of the lungs.

Tuberculosis of the bronchial glands and elsewhere was responsible for 9 per cent. of the total crippling of school children. [J. B. H.]

ADMINISTRATIVE REQUIREMENTS OF THE VARIOUS TYPES OF TUBERCULOSIS.

MCGREGOR, A. S. M. (*British Medical Journal*, August 26, 1922), takes up the requirements of the various types of tuberculosis from a Public Health point of view and considers the question of the administrative requirements of the patient who is definitely consumptive, particularly the ambulant chronic group. He calls attention to the lack of facilities for treating non-pulmonary forms of tuberculosis. [J. B. H.]

INDUSTRIAL FATIGUE AND VOCATIONAL SELECTION ON A BASIS OF PHYSICAL INQUIRY.

MCKAIL, D. (*British Medical Journal*, August 26, 1922), discussing the subject of industrial fatigue, summarizes his suggestions as follows:

Hours of labour: Spells of work to be normally two to three hours in all occupations demanding steady application and attention. In arduous work there must be rest spells after excessive exertions, and the latter must not be unduly prolonged.

Definite intervals for meals must be provided. For work starting before 9 a. m. two meal periods should be interposed in the time-table, owing to the fact that few persons take a normal amount of food in the morning, and it is too long to work a three or four hours spell before again getting food.

For the eight-hour day a three-spell day is therefore recommended, the first of two hours and two of three hours each. For a nine-hour day the first spell may be two and a half hours and the others three and a quarter hours each. If an industry can give a "living wage" on shorter hours this should be done, and the morning spell abolished.

Conditions of employment, especially in hazardous occupations, should be good. If such conditions cannot be secured, the industry should be suppressed.

Methods of work are worthy of study, to eliminate waste of energy, to find "best" methods, and to avoid harmful movements.

Vocational selection is at present limited to the "don'ts" department. Young persons with certain defects should not be permitted to engage in specified employments. [J. B. H.]

THE PELVIC APPENDIX.

MOUSON, R. (*The Lancet*, September 9, 1922), discusses what he calls the "pelvic appendix," summarizing his remarks as follows:

Inflammation of the pelvic appendix can still mislead diagnostic experts. The ordinary symptoms of appendicitis—abdominal pain and fever—may both be absent in pelvic appendix cases.

The severe pain often attending appendicitis in the early stages, wherever the organ is situated, is due to tension within the appendix resulting from retention of its contents. During this period the symptoms are similar to those of acute intestinal obstruction.

Prolonged tension results in gangrene, when acute pain disappears until perforation occurs and a second variety of pain due to peritoneal irritation suddenly develops. In many pelvic appendix cases there is no severe early pain. Not until the appendix has perforated, generally at its distal end, are urgent symptoms noted. Absence of pain is not special to the pelvic appendix, but is more common in this than in any other variety. The explanation offered is that tension is not present, because this type of appendix can empty itself, and the first serious pain results from perforation.

Frequency of micturition, especially in boys, and in rare cases retention of urine, occurs as an early symptom.

Careful rectal examination may save the situation in a difficult case. So may a blood count.

Pelvic abscess may result from the localization of a diffuse peritoneal infection, from leaking of an abscess connected with the appendix in the right iliac fossa, or from a leaking pelvic appendix.

Rectal tenesmus is the most suggestive symptom of a pelvic abscess.

The treatment of an inflamed pelvic appendix is to remove it as soon as a diagnosis has been made. After the second day from perforation it is seldom wise to operate from the abdomen, and this should never be done if the intestines are distended or the patient is acutely ill. Medical treatment is then the method of choice, until the abscess points in the rectum so prominently that it can be safely and easily opened there.

The normal peritoneum possesses an extraordinary natural immunity, but the importance of its acquired immunity is not yet appreciated fully.

Intestinal obstruction follows operations for pelvic appendicitis with disturbing frequency. When convalescence seems assured, during the second or third week, it develops suddenly. Early operation will save nearly every patient,—delay is deadly. Following abdominal operation for pelvic abscess a complicated faecal fistula may refuse to heal and threaten life. In women vaginal hysterectomy will save the majority of these dangerous cases. [J. B. H.]

BONE GRAFTING AS AN AID IN TREATMENT OF TUBERCULOUS SPINAL CARIES.

GRAY, H. M. W. (*British Medical Journal*, July 15, 1922), in an article excellently illustrated with numerous x-ray plates and photographs, discusses his method of bone grafting in tuberculous bone and joint disease. [J. B. H.]

BRAIN SURGERY.

MACWEN, W. (*British Medical Journal*, July 29, 1922), in his presidential address discusses the general subject of brain surgery in an able and scholarly manner. He takes up this subject from various points of view. This article is good reading, but does not permit of adequate review. [J. B. H.]

ALCOHOL AS A BEVERAGE AND ITS RELATION TO CERTAIN SOCIAL PROBLEMS.

MELLANBY, MOTT, MACCUBDY and others (*British Medical Journal*, August 5, 1922) discuss the subject of alcohol from various points of view. Mellanby considers it from its action on human economy; Mott takes it up in its relation to problems of mental disorders; while MacCubdy considers general etiological factors in the alcoholic psychoses.

These articles and their discussion are of interest and value.

SYMPOSIUM ON BONE SURGERY, FRACTURES, AND BONE REPAIR.

The entire number of the *Archives of Surgery*, Volume 5, Number 3, November, 1922, is devoted to twelve articles on the various aspects of bone pathology.

George D. Davis reports in detail a case of osteosclerosis fragilis generalisata with excellent x-ray plates of the whole bony skeleton. He refers briefly to the literature and instances a few other cases of this extremely rare condition.

Donald M. Glover reports an interesting case of osteosarthritis with excellent x-ray plates of the various fractures occurring in this one case.

Leroy C. Abbott of Ann Arbor makes an interesting report on the Delbert walking plaster for treatment of delayed union in fractures of both bones of the leg and shows a number of interesting x-rays which convince one of the feasibility of this method of treatment when operative interference is not desired or is contraindicated. He reports cases in detail.

Allison and Brooks write an interesting article on bone atrophy, being a clinical study of the changes in bone which result from non-use.

Elie presents an extremely interesting study of the healing of fractures with numerous plates showing gross and microscopic appearance, and draws the following conclusions:

After an ordinary fracture, hemorrhage takes place from the marrow canal under the periosteum. The periosteum is stripped up from the cortex by this hemorrhage and by the fracture itself. Then comes the deposition of fibrin, the formation of granulation tissue and the formation of cartilage and fibrocartilage in the space beneath the stripped-up periosteum. Probably the function of the periosteum is only important in the early stages, up to the formation of the cartilaginous callus. The periosteum probably serves to keep the hemorrhage from escaping and the granulation tissue undisturbed. It has no bone-forming function, and bone is not built out of it. The subsequent ossification of the cartilaginous callus is carried out almost entirely, if not exclusively, from the external aspect of the cortex. The internal callus plays no effective part in the union. It is rudimentary when it is present.

Whitman contributes an article on collective and

operative treatment of structural scoliosis, profusely illustrated, and draws the following conclusions:

1. Given a structural scoliosis of unknown origin in the case of an adolescent who applies for treatment because of progressive deformity, the prognosis as to the arrest of deformity is uncertain.

2. A certain number of such conditions may be held in check by apparatus and exercises, provided the patients at all times take a personal interest in their posture.

3. The only means of improving the actual deformity and the external appearance of the trunk is by apparatus embodying at least some of the principles outlined in the description of the corrective jacket.

4. The maximum degree of improvement having been obtained, the spine must be held corrected for a period of years while accommodative changes in the vertebrae take place.

5. This maintenance of correction can be effected only by a corrective jacket, recumbency, or operation.

6. As a climax to the corrective treatment, and as post-operative fixation, recumbency on the convex stretcher frame has proved effective in still further reducing the deformity of the ribs, and in allowing full opportunity for chest expansion.

7. While the amount of actual anatomic correction of the deformity of the vertebrae is exceedingly doubtful, the improvement in the patient's external appearance seems to have been maintained by the operation. It has also greatly abbreviated the period of their convalescence.

8. The older the patient, the more rapid the ankylosis.

Kleinberg writes on the operative treatment of scoliosis alone and believes that the discomfort and disadvantages of plaster of paris jackets are avoided and the physician is spared much hard work through the operative treatment. The final results obtained compare more than favorably with those following the use of plaster of paris braces or gymnastic exercises.

Bancroft contributes an excellent article on bone repair following trauma and infection, and draws the following conclusions from his work:

From the experience obtained with these cases and from the many animal experiments, I am convinced that, in the future in the treatment of children, we can be more conservative.

First, adequate drainage should be obtained with as little trauma as possible. Second, in cases in which the patient is clinically progressing favorably, bone, which by roentgen-ray or gross examination appears dead, may frequently be saved to advantage in order to prevent deformity and hasten convalescence.

Finally, I believe that in the past we have made bone repair appear much too complex. We have been lost in the by-ways of periosteum, endosteum and bone reticulum. It is much simpler to believe that bone occurs as a chemical deposition in connective tissue. Such a theory allows for bone formation as it appears in all parts of the body.

In bone transplants, we must assume that the transplant *per se* does not live, but that it acts as a framework for new bone and stimulates osteogenesis. We must, therefore, apply grafts that can easily have a blood supply established, and have sufficient free surface to stimulate bone production.

In the treatment of fractures, care must be taken to increase the blood supply. This is more important than immobilization that constricts the limb. Early motion favors union for this reason.

What we are apparently doing when a bone graft is made or when extraskeletal bone occurs in an experiment is producing the right chemical state. Then the process of bone formation inevitably follows.

Lounsberry and Metz present an article beautifully illustrated with drawings on lipping fracture of the lower articular end of the tibia and show their end-results. [E. H. R.]

A REPORT OF FIVE UNUSUAL CASES OF HYPERTENSION IN PREGNANCY.

WILLIAMSON, A. C. (*Surgery, Gynecology and Obstetrics*, November, 1922), writes as follows:

Hypertension may exist throughout pregnancy with no apparent sign of kidney lesion.

Some cases of hypertension in pregnancy may be carried through to a successful termination with careful watching.

Cases in pregnancy with hypertension without demonstrable kidney lesions are probably of vascular origin.

The most likely cause of such hypertension is that it is of toxic origin with the primary action taking place directly in the arterial wall.

The prognosis of such cases is always grave and doubtful both for immediate and subsequent life and the patient should appreciate fully the import of hypertension. [E. H. R.]

SOME ERRORS IN THE DEVELOPMENT OF THE THYROID GLAND.

HARTLEY, J. N. J. (*Surgery, Gynecology and Obstetrics*, November, 1922), writes as follows:

Embryological researches have led to a better comprehension of the various congenital abnormalities encountered in the thyroid gland.

A lingual thyroid in many cases is a true ectopia thyroidea, and then represents the whole of the acting thyroid tissue of the body.

This is clinical confirmation of the modern embryological teaching that the thyroid derives no functioning tissue from the ultimobranchial body.

The absence of a palpable isthmus in the pre-tracheal region is strong evidence of such a lingual swelling being an ectopic and not an accessory thyroid.

When a lingual thyroid gives rise to symptoms demanding surgical intervention, a minimal amount of tissue should be removed, and the surgeon should be prepared to adopt thyroid therapy if the clinical symptoms or the basal metabolism rate indicate a state of hypothyroidism.

The so-called "infrathyroid" type of thyroglossal cyst not infrequently has an epithelial prolongation upward, either through, behind, or in front of the hyoid bone, and, to ensure non-recurrence, it is advisable, when the pedicle can be traced to this bone, to resect the middle portion and to search for a tract leading to the foramen caecum. [E. H. R.]

FRACTURES OF THE TIBIAL SPINE COMBINED WITH FRACTURES OF THE TUBEROSITIES OF THE TIBIA.

SEVER, J. W. (*Surgery, Gynecology and Obstetrics*, November, 1922), presents an interesting article on this latter rather rare condition. He finds that the condition is often discovered on close examination of x-ray plates of old lesions, that the lesion is often overlooked, the symptoms are more or less of a chronic nature, and the condition is also oftentimes discovered after a long lapse of time. The cases show a very good ultimate function after considerable time. Treatment has generally been non-operative, being by means of fixation and extension followed by massage and baking, and passive and active motion. No operation was done in the series reported. Operation should be reserved for cases which do not obtain full and free extension of the knee, especially where

there is pain and disability. The vertical incision through the patella is the technique of approach. [E. H. R.]

TUMORS OF THE TESTICLE, WITH ANALYSIS OF ONE HUNDRED ORIGINAL CASES.

TANNER, C. O. (*Surgery, Gynecology and Obstetrics*, November, 1922), writes as follows:

New-growth of the testicle occurs about once in 2000 male hospital admissions. The disease is practically always unilateral, involving both sides only as a metastatic growth from the skin, seminal vesicles, etc. Trauma as an etiological factor in these tumors evidently has some foundation. Practically all cases occur between the ages of 18 and 50 years, the period of greatest sexual activity. Both testicles are involved with about equal frequency. Undescended testicles within the canal are more apt to become malignant than normally placed organs. Undescended testicles within the abdomen are relatively immune to malignant changes. The average mortality of these tumors taken from literature is about 80 per cent., based on a four-year postoperative period. In this case the mortality was found to be about 70 per cent.

The so-called mixed type of tumor gives a much higher mortality than the carcinomatous type. In this series it was 90 per cent. in the former type and 60 per cent. in the latter. Tumors containing cartilage and squamous epithelium seem to have a decidedly unfavorable prognosis. The prognosis in abdominal tumors is also very bad—only 6 per cent. of a large series being alive and well two years after operation.

The radical operation should be performed in all cases in which the disease is apparently limited, i.e., in cases showing no abdominal metastases clinically. The ordinary castration operation, even when supplemented by Coley's serum, x-rays or radium, does not yield satisfactory results. [E. H. R.]

AN ARTICLE ON SYPHILIS OF THE UTERUS BY SOSNOWSKI.

SOSNOWSKI, J. C. (*Surgery, Gynecology and Obstetrics*, November, 1922), presents a fairly clear picture of a condition which it is believed may many times be overlooked and confused with pathological conditions in the uterus of a lesser severity. Undoubtedly the recognition of a syphilitic condition of the uterus with adequate treatment would cure a great many cases which now go on to invalidism without the true condition being recognized. The author states that the Wassermann reaction in many of these cases was negative and, therefore, the diagnosis was not confirmed by laboratory test; but, after some study, the clinical picture is generally fairly clear.

He speaks of the initial sore as not generally being on the cervix. If, however, it is on the cervix, we find this part of the organ rather soft, congested, with the ulcer surrounded by a bluish areola, and the ulcer covered with dirty looking membrane. The character of the discharge is serosanguineous. The second stage, or the stage of congestion and engorgement of the uterus, is called by the author the hyperplastic stage, or that of the wet uterus. The third stage, the hypoplastic or stage of the dry uterus, is the dormant stage. As the uterus passes through the wet stage, it is less and less apt to retain a foetus, and in the dry stage, it is almost impossible for a fertile ovum to find lodgment or nourishment in the fibrous-walled organ. This is the reason why abortion so often occurs in this type of uterus.

Given a combination of uterine symptoms with other evidences of syphilis, it is wise to try anti-syphilitic treatment before operative measures of any sort are instituted. [E. H. R.]

OVARIAN TRANSPLANTATION.

MARTIN, F. H. (*Surgery, Gynecology and Obstetrics*, November, 1922), writes as follows:

My first report was made in 1903; my second report in 1908; my third in 1911; my fourth in 1915; my fifth in 1917. As in this, my sixth report, I have attempted each time to bring the literature up to date, and to furnish a complete bibliography.

I can summarize my impression of the whole subject by saying that as more evidence is accumulated from the literature, the claim of the earlier enthusiasts seems to become less and less substantial.

The one most hopeful feature that I am able to glean from the mass of more or less loosely recorded evidence is that the clinical records dealing with transplantation in the human show that while autotransplants give some evidence of success, homotransplants and heterotransplants give practically none at all. On the other hand, definite evidence of success is recorded as the result of carefully conducted experiments on animals in which matters of selection of appropriate material and proper technique are more controllable than in dealing with the human. May we hope that this fact and a more careful study of the subject from a scientific and experimental standpoint will reverse the unsatisfactory showing?

In the meantime, in the light of previous publications, the opinions expressed in the writings on this subject in 1918, 1919, 1920, and 1921, may be summarized as follows:

1. Clinically, there is very little to encourage one to believe that transplantation of ovaries as practised up to the present time has more than speculative value as a surgical procedure.
2. There is some evidence that autotransplants are of some value in deferring the symptoms of the menopause and delaying the cessation of menstruation. It is difficult, however, not to attribute some of this evidence to suggestive therapeutics or to unattached ovarian tissue left *in situ*.
3. There is practically no convincing evidence that homotransplants have been successful in the human female.
4. There is no evidence that heterotransplants have been successful where the human female has been the recipient.
5. There is some encouraging evidence recorded in experimental animal surgery that not only autotransplants, but homotransplants, and even heterotransplants have been successful and the sexual function of the castrated animal maintained.
6. The technique followed by the various operators on human females, in too many instances, seems unsurgical and too often is incompletely and loosely recorded, leaving the impression that the conclusions derived from such work must be unreliable.
7. There is, however, encouraging evidence in all of this endeavor to lead one to hope that the subject will be pursued experimentally, especially for the purpose of devising a rational and simple technique, based on the work of the serologists, the endocrinologists, the haematologists, and the practical clinical surgeons. [E. H. R.]

PELVIC TUMORS WITH SACRAL ATTACHMENTS.

LAW, A. A. (*Surgery, Gynecology and Obstetrics*, November, 1922), states that, owing to the demonstrated tendency to malignant degeneration, these tumors should be removed when recognized and that they always should be attacked from behind through the sacro-coccygeal route. The modified Kraske approach is ideal for the larger tumors, which permits them to be shelled out with little difficulty, usually

without invading the peritoneum, and facilitates the control of hemorrhage. The author reports two cases. [E. H. R.]

OBSERVATIONS ON THE TREATMENT OF SYPHILIS IN PREGNANCY IN THE DEPARTMENT OF HEALTH IN DETROIT.

WELZ and VAN NEST (*American Journal of Obstetrics and Gynecology*, Vol. IV, No. 2, August, 1922) state that most obstetricians find that the greatest causative factor in premature deliveries and macerated feti is syphilis. At Prenatal I of the Department of Health of Detroit an attempt has been made to lessen the incidence of congenital syphilis through prenatal cure. During 1921, 1467 new prenatal cases attended the clinic. Of them, 47.6 per cent. were white and 52.4 per cent. were colored. Of the total, 13.1 per cent. were diagnosed as syphilitic. Among the white patients, 5.7 per cent. were syphilitic, and among the colored, 19.3 per cent. were syphilitic. Of the total of 193 patients having syphilis, only 147 were cured for through pregnancy. The following conclusions were made:

About 85 per cent. of the mothers diagnosed as syphilitic suffered from latent syphilis. It was not through complaint, but through routine examination that these were discovered.

Early diagnosis and treatment are of utmost importance. As syphilis is transmitted only through the placenta to the fetus after a period of about three months, it is evident that treatment instituted early in pregnancy can prevent fetal transmission. After the fetus is infected, the possibility of fetal cure is lessened and it is more difficult to accomplish. It is questionable whether antisyphilitic treatment through the mother can be of any value to the fetus *in utero* when the vital organs of the fetus are severely involved. Full treatment should be attempted even at the end of pregnancy in hope of securing a controlled case in a living child which can be further cared for after birth.

The injection of neosalvarsan was not found to produce miscarriages or premature deliveries. With a small initial dosage, gm. 0.3, and an increase to gm. 0.45 or gm. 0.6 in weekly injections, no harm results.

Those mothers who have not completed their treatment before delivery are urged to return for the completion of treatment after delivery. They are also urged to return to the clinic for examinations and care as soon as future pregnancies are suspected.

Every prenatal case should be carefully examined for syphilis. Routine examinations of placenta and fetus for signs of syphilis are valuable not only to the child, but to subsequent children which are born after proper treatment has been instituted upon the mother. [H. G.]

INFLUENCE OF GLANDS WITH INTERNAL SECRETIONS ON THE RESPIRATORY EXCHANGE.

MARINE, D., and BAUMANN, E. J. (*Journal of Metabolic Research*, June, 1922, Vol. I, page 777), gave nine experiments from which they concluded that a thyroid-suprarenal cortex interrelationship exists, which is separate from the thyroid chromophil tissue interrelationship. The nature of this relationship is unknown, but the evidence suggests that the suprarenal cortex, as one of its functions, exercises an inhibitory or regulatory control over thyroid activity. They also believed that these observations throw light on the thyroid-sex gland interrelationship known since antiquity and probably have an important bearing both on the etiology of simple goitre and on exophthalmic goitre. [H. G.]

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AN "OPEN LETTER."

A so-called "Open Letter" has been sent to "School Committees, Principals and Teachers" by the Medical Liberty League, Inc. This letter concerns the Schick test, and urges its recipients, before aiding or abetting the efforts of propagandists of the Schick test, or consenting to take any part in conducting Schick test clinics in the schools under their control, to make their own investigation "as to the alleged merits of this much advertised procedure."

An open letter, apparently, is not necessarily the product of an open mind, for the initial statement is followed by four printed pages of violently anti-Schick propaganda. The unfortunate cases of Dallas, Texas, of 1919, where an improperly made proprietary preparation of toxin-antitoxin caused severe reactions and five deaths, and the experience of Macon, Georgia, in the same year, are cited. It is interesting as regards this second experience to note that the statements of injuries as read in the plaintiffs' petitions only are quoted.

These statements are followed by a number of others, probably accurately quoted, but, as is the custom of these writers of open letters, so misconstrued or robbed of their context as to imply a meaning that was not intended by their authors in most instances.

It is not our purpose to argue point by point

the conclusions reached by our opponents. The Schick test and toxin-antitoxin have been accepted by the medical profession, that body of men which is, by and large, most capable of passing on their merits. The Schick test and toxin-antitoxin, as with all justifiable medical procedures, are not infallible. The Schick test may be in error; toxin-antitoxin may fail to immunize; the patient with acute appendicitis may die under the knife. Nevertheless, all of these procedures are justifiable. Where we lay ourselves most open to criticism, granted that our products are carefully prepared and our technique scrupulously performed, comes in promising too much for our performances.

We must accept the methods for well-doing that are provided us, acknowledging their failures and liability to error, promising too little rather than too much; then, having formed our opinion as to their value, stand behind them to the limit of their worth, for only in this way can we, who are entrusted with the public safety, successfully combat the forces of ignorance, prejudice, or malice.

THE ANNUAL REPORT OF THE COMMISSIONER OF PUBLIC HEALTH.

This résumé of the conditions met and activities maintained is gratifying to students of health problems because this report presents evidence of progress in this important department of public service.

The loss of three devoted public servants through the deaths of Dr. William J. Gullivan, Prof. William T. Sedgwick, and Mr. James C. Coffey has been a serious one to this department.

All divisions of the department are now in charge of full-time expert officials.

1921 has no parallel in the history of the Commonwealth in its freedom from epidemics. One typhoid epidemic, due to infection of a single unpasteurized milk supply, practically covers the entire story of serious epidemics for the year! There were 114 cases in this outbreak.

The number of deaths caused by pulmonary tuberculosis during 1921 throughout the entire state will not exceed 3,300, which is at a rate of about 85 deaths per 100,000—a reduction of 38 per cent. since 1918.

Instead of expanding the organization concerned with control of venereal diseases, as had been planned, the department was forced to cut down expenditures in this direction because of the cessation of Federal funds for the furtherance of venereal disease work in the several states. The attendance at venereal clinics is increasing, but the Massachusetts Charitable Eye and Ear Infirmary workers report an increase in cases of congenital eye syphilis. The crying need in this work is for follow-up workers. (1) To discover fresh foci; (2) To get in-

fected persons under treatment as soon as possible, and (3) To see that these individuals persist in treatment until benefit is assured.

The lepers formerly at the leprosarium on Penikese Island have been transferred to the new Federal leprosarium at Carville, Louisiana. The closing of the state leprosarium is the outstanding institutional feature of the year.

The following recommendations for legislation have been submitted to the General Court:

1. An act accepting the provisions of an act of Congress relative to the promotion of the welfare and hygiene of maternity and infancy and for other purposes and providing for cooperation with the Federal government.

2. An act relative to the analysis of liquor by the Department of Public Health.

3. An act relative to the publication of certain information by the Department of Public Health.

4. An act relative to the examination of vinegar.

5. An act relative to the purchase of land in Westfield.

6. A resolve relative to the reappropriation of certain funds to be used in connection with the work of the sanitary improvement of the Neponset River.

It is interesting to note that the percentage of deaths of six of the more common communicable diseases to the death rate from all causes for the last forty years is decreasing.

	1880.	1890.	1900.	1910.	1920.
Diphtheria	2,394	1,026	1,475	679	591
Measles	236	114	330	240	352
Scarlet fever	574	196	391	254	214
Pulmonary tuberculosis					
Deaths	5,494	5,791	5,199	4,503	3,645
Typhoid fever	882	835	632	411	95
Whooping cough	290	363	337	183	546
	9,810	8,925	8,364	6,270	5,443
Total deaths from all causes	36,589	43,528	51,156	54,407	53,632
Percent due to above communicable diseases	26	20	16	11	10

The following table gives the total number of cases and deaths reported for the year, i.e., calendar year, 1921:—

	Cases.	Deaths.
Actinomycosis	2	1
Anterior poliomyelitis	233	47
Anthrax	6	—
Chicken-pox	8,324	—
Diphtheria	9,100	603
Dog-bite	118	—
Dysentery	25	23
Encephalitis lethargica	117 ¹	74
Epidemic cerebrospinal meningitis	164	58
German measles	649	—
Gonorrhea	5,563	5
Influenza	735	155
Leprasy	1	1
Malaria	49	2
Measles	17,827	174
Mumps	3,952	6
Ophthalmia neonatorum	1,573	—

	Cases.	Deaths.
Pellagra	14	14
Pneumonia, lobar	4,080	1,818
Scarlet fever	8,321	189
Septic sore throat	140	42
Smallpox	37	—
Syphilis	2,497	198
Tetanus	39	25
Trachoma	97	1
Trichinosis	10	—
Tuberculosis, pulmonary	6,168	3,304
Tuberculosis, other forms	827	551
Typhoid fever	917	121
Whooping cough	5,763	197
Rabies	1	3
Hookworm	1	—
Typhus fever	2	1
Total	77,302	7,621

¹ Made reportable March 1.

For the work of the Subdivision of Venereal Diseases the following table, showing the figures for 1919, 1920 and 1921, indicates at a glance the continued progress in this field:—

	1919.	1920.	1921.
Ampoules of arsphenamine distributed	21,667	26,782	38,473
Cases reported by number:			
Gonorrhea	9,435	7,225	5,563
Syphilis	4,127	2,986	2,497
Pamphlets distributed	21,762	59,280	37,802
Smear examinations	4,035	2,815	2,478
Wassermann examinations	32,390	37,207	42,957
Figures for all State-approved clinics:			
New patients	4,492	7,314	4,197
Total treatments	49,005	142,367	98,473
Lapsed cases:			
Reported	1,421 ¹	1,344	1,147
Returned to treatment	616	365	327

¹ Cases reported by name from State institutions are included with the lapsed cases up to April, 1919.

HISTORICAL LIGHT ON THE SUBJECT OF BIRTH CONTROL.

The sociologic problem of birth control is being seriously considered in many countries. In the United States the people have dealt with it quite definitely, whereas in England, for example, certain phases of it are being discussed in a way which would lead to the suspicion that the public mind has not yet been developed to the point of a definite conclusion. An English editor* gives us the following statistical information, which, we admit, piques our historical curiosity to know more about these famous men; but why does he descend from the philosophical peak of putting to us an unanswerable scientific question?

"So far as the mental side is concerned, history gives us facts concerning the parental age which is most favorable to the production of the best offspring. Shakespeare was the third child; Tennyson, the third son; Michael Angelo, the second son; Beethoven, the second of five sons and two daughters; Cromwell, the second son; Kant, the second of nine children; Newton, the only child; Darwin, the youngest but one of six children; Lyell, the eldest son; Goethe, the eld-

*Medical Press.

est child; Wellington, the third son; Robert Blake, the eldest of thirteen sons and two daughters; Chatham, the second son; Burke, the second son; Swift, the second child; Gibbon, the eldest of five brothers, and Dickens, the eldest of eight. Bacon was the youngest son; Carlyle, the eldest of nine children; Gladstone, the youngest son; Clive, the eldest son; Warren Hastings, an only child.

In this casual list the intellectual prodigy was the eldest son in nine out of the twenty-two, *i.e.*, Shakespeare, Carlyle, Newton, Goethe, Robert Blake, Clive, Warren Hastings, Gibbon and Dickens. Seven others were second children.

Among the nine eldest sons Shakespeare and Newton are the outstanding great men. However, Shakespeare, being a third child, would not have lived if only two children had been born to the elder Shakespeares. The same statement holds true in regard to Darwin, Wellington and Gladstone, as well as to Bacon, who was the youngest, and to Tennyson, who was the third son.

How would the pages of history have been altered if biological laws had been interfered with in these cases?"

These figures obviously cannot be taken seriously in considering the subject of birth control from a scientific standpoint. They deserve a sentimental interest only—and such we give them with enthusiasm.

DARWINISM VERSUS CHRISTIANITY AGAIN.

At a recent conference in St. Paul, Minnesota, of pastors representing Baptist, Congregational, Presbyterian and Lutheran churches, it was decided to issue a call for a state-wide meeting of Protestant ministers to oppose the teaching of evolution in the public schools of Minnesota.

The resolutions passed closed with the following paragraph:

"And we declare that if school authorities prove derelict in the enforcement of the law relating to the teaching of religion or of theories subversive of the Christian faith, we will appeal to the legislature for the enactment of such laws as shall eliminate from our tax-supported school system this antiscientific and antiscritptural theory of the origin of man and the universe."

Although there may be difference of opinion relating to the theories of evolution it is open to question whether the decision relating to the interpretation of scientific data should be left with the clergy, for there is not sufficient evidence at the present time indicative of an adequate amount of study on the part of the clergy that would warrant leaving the interpretation of the evidence to this body of men.

Furthermore, many scientific minds have not found in the theory of evolution any conflict with religious teaching.

AN ALLEGED ABORTIONIST DISCIPLINED BY THE COURT.

The daily papers report that Dr. Alfred D. Shea, of Cambridge, pleaded "nolo contendere" November 21, 1922, when arraigned in the Superior Criminal Court, charged with performing an illegal operation on a girl.

The Judge, according to the reports, placed Dr. Shea on probation for three years, with the condition that Dr. Shea shall not again engage in practice in this State.

In May, 1912, Dr. Shea was convicted on a charge of criminal abortion and sentenced to a term in prison of not more than 10 years, and not less than 7 years. He was pardoned by the Governor and Council the following December. Upon suspicion he was under investigation in another similar case, but through questions of legal technicality was not brought to trial.

It is gratifying to learn that this dishonored physician cannot pose as a member of the profession. The condition imposed by the Judge is an unusual way of dealing with this form of irregular practice and will have a good effect.

DIAGNOSTIC SERVICE FOR TROPICAL AND EXOTIC DISEASES.

The Department of Tropical Medicine of the Harvard Medical School has organized, for the service of the public through the medical profession generally, a diagnostic laboratory affiliated with the Service for Tropical Diseases at the Boston City Hospital.

So far as the nature of the particular problem allows, final reports will be rendered on material sent to the Department of Tropical Medicine. When it is not practicable to make the diagnosis from material that can be sent, and the presence of the patient is necessary, unless the Health Department should deem it advisable to place the case elsewhere, the patient can be referred to the Service for Tropical Diseases at the Boston City Hospital, where the necessary examination will be made either in the Out-Patient Department (Tuesday or Thursday mornings) or after admission to the ward-beds of the Service for Tropical Diseases. The necessary diagnostic procedures will then be carried on either at the Boston City Hospital or at the Harvard Medical School through the agency of the Department of Tropical Medicine.

A list of diseases in regard to which the Department of Tropical Medicine is prepared to advise as to prevention or diagnosis follows.

In a parallel column the appropriate laboratory methods of diagnoses are indicated.

Physicians are invited to write or to telephone to the Department of Tropical Medicine for information about its diagnostic service or about the best methods of obtaining material for examination.

TROPICAL AND EXOTIC DISEASES.

(Diseases printed in italics have been found in Massachusetts.)

SECTION I: PROTOZOAN DISEASES AND DIAGNOSTIC METHODS.

1. *Malaria*: *tertian*, *subtertian*, *quartan*. Examination of blood smears or fresh blood preparations.

2. Trypanosomiasis: *African Sleeping Sickness*. Animal inoculations. Chagas Fever (South American Trypanosomiasis). Examination of blood smears or fresh blood preparations. Spinal fluid.

3. Leishmaniasis: *Kala azar*. Animal inoculations. *Oriental sore*. Examination of scrapings from lesions. American Leishmaniasis. Examination of sections of tissue.

4. *Amoebiasis*. Examination of fresh faeces.

5. Infection with: (a) *Balantidium coli*. (b) *Giardia intestinalis* (lamblia). (c) *Trichomonas intestinalis* (trichomonas). (d) *Chilomastix mesnili*. Examination of fresh faeces.

SECTION II: SPIROCHETAL DISEASES AND DIAGNOSTIC METHODS.

1. *Yaws*. Examination with dark field of serum from lesions and of stained preparations.

2. *Relapsing Fever*. Examination of fresh blood preparations and stained smears. Animal inoculations.

3. *Rat-bite Fever*. Dark field examination of fresh blood and of stained specimens.

4. *Infectious Jaundice*. Animal inoculations. Agglutination test with patient's blood. Urine examination.

5. *Yellow Fever*. Animal inoculations. Serum reactions. Examination of fresh blood and stained preparations.

SECTION III: BACTERIAL INFECTIONS AND DIAGNOSTIC METHODS.

1. *Plague*. Examination of blood cultures and cultures from material from gland puncture. Animal inoculations.

2. *Tularense infection* (deer-fly fever). Examination of cultures of blood and material from glands. Animal inoculations.

3. *Undulant Fever*. Examination of blood cultures. Agglutination test.

4. *Bacterial Dysentery*. Examination of cultures from faeces. Agglutination test.

5. *Cholera*. Examination of cultures from faeces. Agglutination test. Pfeiffer's reaction.

6. *Leprosy*. Microscopical examination of nasal secretion and scrapings from lesions.

SECTION IV: INFECTIONS OF UNKNOWN ETIOLOGY AND DIAGNOSTIC METHODS.

1. *Typhus Fever*. Agglutination reaction of Weil-Felix. Pathological examination of skin.

2. *Rocky Mt. Spotted Fever*. Animal inoculations with blood.

3. *Inguinal Granuloma*. Examination of smears from lesions. Examination of sections of tissues.

4. *Tropical Phagedena*. Examination of smears from lesions. Examination of sections of tissues.

5. *Veldt sore*. Examination of smears from lesions. Examination of sections of tissues.

SECTION V: MYCETOMA AND DIAGNOSTIC METHODS.

1. *Madura Foot*. 2. *Blastomycosis*. Microscopical examination of fresh and stained preparations from lesions.

3. *Sporotrichosis*. Cultures from lesions.

SECTION VI: PARASITIC INFECTIONS AND DIAGNOSTIC METHODS.

1. *Filariasis*. (a) *Filaria bancrofti* (endemic elephantiasis). Examination of fresh and stained blood preparations. (b) *Filaria loa* (diurna). Examination of fresh and stained blood preparations. (c) *Onchocerca volvulus* (filaria volvulus). Examination of fresh and stained blood preparations, and examination of sections of lesions.

2. *Distomiasis*. (a) *Paragonimiasis* (endemic hemoptysis). Examination of sputum for ova. (b) *Schistomiasis*. I. *Schistosomum hematobium* (vesical bilharzia). Examination of urine or faeces for ova. II. *Schistosomum mansoni* (rectal bilharzia). III. *Schistosomum japonicum*. Complement-fixation test with blood. (c) *Clonorchiasis*. Examination of faeces for ova. (d) Other liver flukes. I. *Fasciolopsis buski*. Examination of faeces for ova. II. *Fasciola hepatica*. Examination of faeces for ova.

3. *Ankylostomiasis* (Hookworm, Uncinariasis). Examination of faeces for ova or parasites.

4. *Taenia Infections*. *T. Echinococcus*. Examination of pathological material. Agglutination test. *Dibothriocephalus* (Fish Tapeworm). *T. Nana* (Dwarf Tapeworm). Examination of faeces for ova. Identification of parasites.

5. *Strongyloides*. Examination of faeces.

6. *Myiasis of Nose, of Ear, of Gastro-intestinal tract.* Examination of discharges and identification of larvae.

SECTION VII: OTHER DISEASES OF INTEREST TO THE DEPARTMENT.

1—*Sporadic elephantiasis.* 2—*Heat-stroke,* heat exhaustion. 3—*Siriasis.* 4—*Beriberi.* 5—*Scurvy.* 6—*Pellagra.* 7—*Sprue.* 8—*Small-pox.* 9—*Dengue.* 10—*Chiggers Disease.* 11—*Acarine dermatomyeosis.* 12—*Oroya Fever.* 13—*Verruga Peruviana.* 14—*Japanese River Fever (Tsutsugamushi fever).* 15—*Pappataci or Phlebotomus Fever.* 16—*Black-water Fever.* 17—*Dracunculiasis (Guinea-worm disease).*

GEORGE C. SHATTUCK, M.D.

News Notes.

FRANKLIN DISTRICT MEDICAL SOCIETY.—The November meeting was held at the Weldon, Tuesday, November 14, 1922. Programme: "Along the Byways," Dr. W. A. Hutton, Shelburne Falls. "The Bright Child and the Dull," Dr. Walter C. Fernald, Waverley, Mass.

DEATH RATE IN BOSTON.—During the week ending November 18, 1922, the number of deaths reported was 221 against 203 last year, with a rate of 15.09. There were 27 deaths under one year of age against 22 last year. The number of cases of principal reportable diseases were: Diphtheria 70, Scarlet Fever 35, Measles 63, Whooping Cough 70, Typhoid Fever 4, Tuberculosis 43. Included in the above, were the following cases of non-residents: Diphtheria 8, Scarlet Fever 8, Whooping Cough 1, Tuberculosis 8. Total deaths from these diseases were: Diphtheria 3, Measles, 1, Whooping Cough 3, Tuberculosis 8. Included in the above, were the following cases of non-residents: Tuberculosis 2.

THE UNIVERSITY OF ROCHESTER is completing this month the first building for the new medical school. The City of Rochester has appropriated \$1,000,000 for the new City Hospital to adjoin the Strong Memorial Hospital. The University is to furnish the professional staff for these combined hospitals, which will have capacity for 460 beds.

DR. FRANCIS W. PEARBODY read a paper Nov. 21, 1922, before the Section of Medicine of the New York Academy of Medicine under the title, "The Patient and the Man."

CHANGE OF OFFICES.—George David Cutler, M.D., and Ernest T. Saeger, M.D., announce the removal of their offices to 270 Commonwealth Avenue, Boston. Telephone Back Bay 4520. Patients seen by appointment.

GRADUATING EXERCISES OF THE SCHOOL OF NURSING OF THE PETER BENT BRIGHAM HOSPITAL.—On November 10, 1922, thirty nurses received diplomas as graduates of the Peter Bent Brigham School of Nursing. Professor C. E. A. Winslow of Yale University delivered an address and Miss Hall gave a report of the work done in the school. The exercises closed with a reception.

THE PASTEUR LECTURE FOR 1922 of the Institute of Medicine of Chicago was delivered by Dr. Jacques Loeb, of the Rockefeller Institute, on Friday, November 24, 1922.

DR. JAMES EWING, Professor of Pathology at Cornell University Medical College, New York, addressed the College of Physicians of Philadelphia, on November 1. His subject was "The Principles of the Radiation Treatment of Cancer."

DR. ROBERT BÁRÁNY, Professor of Otology at the University of Upsala, Sweden, and winner of the Nobel Prize in Medicine in 1914, is touring the United States, stopping in each of the larger cities to lecture before otologists and ophthalmologists. He gives a two weeks' lecture course and several clinics. His itinerary includes Chicago, Denver, Los Angeles, Houston, Cincinnati, Cleveland, Boston, and New York.

THE SALVATION ARMY ROXBURY HOSPITAL invitations were issued for the opening exercises to be held at the hospital, 87 Vernon street, on Thursday evening, November 23, at eight o'clock. Addresses were delivered by Colonel W. A. McIntyre, Salvation Army, and Dr. J. A. Cousins, President Tufts College.

DR. SELIG HECHT, national research fellow in chemistry, has been appointed research fellow in physical chemistry at the Harvard Medical School, where he will continue his investigations.

DR. ARTHUR BLISS DAYTON, associate in medicine at the Yale School of Medicine, has been given a year's leave of absence to serve as Professor of Medicine at the Medical School of Yale-in-China.

MR. JOHN D. ROCKEFELLER in a recent communication to the directors of the University of Cincinnati, objecting to the plan of naming a chair in the College of Medicine, says, "I should prefer to have my name recorded in the hearts and lives of those using the improvements which donations from me have made possible rather than have it carved in stone or officially connected with the building."

AMERICAN SURGICAL ASSOCIATION.—The next meeting will be held at Rochester, Minnesota, January, 1923.

The officers elected at the annual meeting are President, Dr. Lewis L. McArthur, Chicago; Vice-Presidents, Dr. Ellsworth Eliot, Jr., New York; Dr. Donald C. Balfour, Rochester, Minnesota; Secretary, Dr. Robert B. Greenough, Boston; Treasurer, Dr. Charles H. Peck, New York.

BOSTON MEDICAL HISTORY CLUB.

The first meeting of the season was held at the Medical Library on Nov. 17, and it was voted to hold future meetings on the third Mondays of each month through April.

In commemoration of the third centenary of Molière's birth (1622), Dr. Joseph W. Courtney read a paper on "Molière and the Faculty." His paper was a careful study of medical conditions in France at this period, with especial emphasis on the co-called Faculty of Medicine in Paris, its pedantry, jealousy of other schools, ignorance, and its downfall, greatly hastened by Molière's satire.

Many local allusions in the text of the plays were explained and various characters identified with well known doctors of the time. Extracts from the plays, translated into delightful colloquial English by the reader, gave great pleasure and an added realization of Molière's skill and power, and his tragic end was vividly sketched.

Following the paper, books, pictures and articles published in medical literature having to do with Molière were shown by various members of the club.

The next meeting, to be held Monday, Dec. 18, will be devoted in part to Pasteur, the centenary of whose birth occurs on Dec. 27.

CANCER DEATH RATE.

According to statements made by Mr. Edgar A. Bowers, State Registrar of Vital Statistics, the deaths from this disease since July 1, 1922, indicate that the rate will equal that of the first six months of this year and that the present rate is about the same as for 1921.

There were 2334 deaths from cancer during the first six months of this year, divided as follows: males, 899, and females, 1435. Based on the estimated population of Massachusetts this means an annual death rate in this state of 119.6 per 100,000 population. The rate for 1921 was 119.5.

BEVERLY HOSPITAL CLINIC.

A clinic was held at the Beverly Hospital, Thursday, Nov. 16, at 4 P.M., in observation of "Cancer Week."

Dr. Channing Frothingham of the Peter Bent Brigham Hospital, Boston, was the first speaker, the subject being, "Early Diagnosis of Cancer." He specially stressed the importance of thorough investigation by both patient and doctor of the cause of pain or bleeding in any part of the body.

Dr. P. P. Johnson, Chief of the Surgical Staff of the Beverly Hospital, reviewed the year's cases of cancer at the Hospital. This review brought out most strikingly the fact that too long a time elapsed between the recognition of symptoms and operation.

Dr. Isobel Bogan, Roentgenologist at the Beverly Hospital, showed interesting x-ray pictures of cancer and brought out the fact of the great aid that the x-ray gave in the early recognition of cancer in all parts of the body. She also emphasized the importance of using this aid of diagnosis more frequently and earlier.

Dr. W. T. Hopkins, of Lynn, discussed the papers and pointed to the importance of the earlier recognition of symptoms of cancer by the patient, and the importance of consulting the doctor earlier and insisting on a thorough examination.

NEW ENGLAND DERMATOLOGICAL SOCIETY.

At the quarterly meeting of the New England Dermatological Society on October 11, 1922, at the Massachusetts General Hospital, the following cases were shown:

1. Young woman; pigmented areas on face, possibly from application of face cream containing mercury. Dr. C. M. Casselberry.

2. Young woman; late syphilitic lesions of the face. Dr. C. M. Smith.

3. Case for diagnosis. Man, 43 years old, fisherman; nodular lesion at the left corner of mouth; duration, five months. Low grade infection, syphilis, sarcoid, and tuberculosis considered. Dr. A. M. Greenwood.

4. Man, 50 years old, a farm worker, with actinomycosis of skin over right jaw. Dr. J. H. Blaisdell.

5. Man, 39 years old, who had taken considerable Fowler's solution, showing keratoses and epithelioma, probably arsenical in origin. Dr. A. M. Greenwood.

6. A baby, 22 months old, showing persistent crops of bullous lesions. Pemphigus or dermatitis herpetiformis. Dr. L. J. Cummins.

7. Case for diagnosis. A woman, 27 years old, with persistent, curious erythematous and

papular eruption. Poikiloderma atrophicum vasculare (?). Dr. C. G. Lane.

8. Man, 47 years old; itching papular eruption for two years; glands in neck; x-ray shows subdermal mass. Hodgkin's disease. Dr. C. G. Lane.

9. Man, 68 years old; general exfoliative dermatitis. Dr. C. G. Lane.

WORCESTER STATE HOSPITAL TRAINING SCHOOL FOR NURSES.

Dr. William A. Bryan, Superintendent, has issued a circular setting forth the need for nurses in the training school connected with the Worcester State Hospital. The entrance requirements and the details of training are set forth as follows:—

"Candidates must be at least eighteen years of age and have the equivalent of one year of High School. We offer a three years' course of approved instruction and with much practical work in general nursing. The second year the student spends at the Boston City Hospital, where she receives instruction in contagious diseases, care of children, obstetrics and general medical and surgical nursing. In our own hospital, we give an excellent training in general nursing, having active services in all specialties. In addition, nurses receive thorough instruction in occupational therapy, hydrotherapy, mechanical therapy and experience in mental work."

The wages paid the nurses and the opportunities for attendants are also set forth in the circular as follows:—

"Pupil nurses receive in addition to their board, room and laundry, \$40 per month, which is increased to \$50 at the end of the first year. Nurses are allowed 3 hours off duty each day, and one full day each week, and two weeks' vacation each year with pay. Head nurses receive from \$65 to \$75, with maintenance. We can also use a number of women attendants, who will be given an attendant's course in practical nursing. The pay of the attendants is \$40-\$50, and promotion to the grade of charge attendant carries an increase from \$55 to \$65."

THE BENEFITS OF PUBLICITY.

The lectures given during cancer week have aroused considerable interest. The free clinics have been well attended and many persons have been given expert advice. Surgeons will remove many cancers in the early stages, thereby saving many years of life as a result of the information disseminated.

Dr. Wolbach submits the subjoined letter which demonstrates one of the results of publicity. The name of the writer is omitted because the JOURNAL does not lend itself to this form of advertising.

Dr. Wolbach has not yet recommended this man for a position on the faculty of a medical school, or the department of pathology connected with any of our hospitals.

Nov. 17, 1922.

Sir.—With reference to your lecture on Cancer, reported in the Boston *Globe* of the 13th inst., I wish to inform you that I make a salve which cures all known skin troubles, including piles, cancer, and blood poison. In the above-named cases it has done the knife out of many a job. Want of finance prevents me from bringing it properly under public notice, and having it tested on what is called leprosy, which I will be in a position to do later. There are five ingredients in it, two of which are red and white precipitate powders. If you think it will help you in any way please let me know. Yours truly,

MEMBERSHIP IN THE HARVARD MEDICAL ALUMNI ASSOCIATION.

At a meeting of the Harvard Medical Alumni Association, held in the faculty room of the Harvard Medical School on November 20, the recommendation of the Council that "Section 1, Article 3, of the constitution be amended to read: 'Each graduate of the Harvard Medical School shall become *ipso facto* a member of the Harvard Medical Alumni Association.'" was approved. Also the recommendation that Section 4, Article 3, be amended by adding the following sentence: "All members of the teaching staff of the Harvard Medical School shall, during their term of service, be considered honorary members of the Harvard Medical Alumni Association," was approved.

FRANCIS M. RACKEMANN, M.D., Secretary.

MOTHERCRAFT CONFERENCE IN BOSTON.

A Mothercraft and Child Welfare Conference is to be held in Boston on Tuesday, December 5, under the auspices of the Massachusetts Federation of Women's Clubs. There will be a morning session at the Exeter Theatre at 10.45, for which the tickets will be complimentary; a luncheon at Hotel Lenox for delegates at 12.45, and at 4.30 an informal reception in the Fine Arts Department of the Boston Public Library, which will be the opening of a child welfare exhibit to be on view during the week. A feature of the meeting in the Exeter Theatre will be the first showing here of the mothercraft film. The speakers will include Mrs. Grace Morrison Poole, President of the Massachusetts Federation; Mrs. Elmer Blair and Mrs. Ira Couch Wood, high officers in the General Federation; Dr. A. E. Winship, representing edu-

cation; Mrs. E. C. Hanington, Superintendent of the Victorian Order of Nurses, Canada; Dr. Allan J. McLaughlin of the U. S. Public Health Service; Dr. John B. Hawes, 2d, of the Boston Tuberculosis Association; Dr. M. E. Champion, representing the State Department of Public Health, and others. Miss May Bliss Dickinson is Chairman of the Conference.

MORE COMMERCIAL VITAMINES.

The daily papers are announcing the discovery of a new process perfected by scientists of Yale, Harvard, Johns Hopkins, Penn. State, Mellon Institute of Industrial Research, and other American Universities, working in conjunction with a group of chemists employed by George S. Ward, millionaire baker. A vitamin syrup has been produced which can be combined with white bread, restoring to it the necessary food elements lost in the refinement of the flour.

Dr. Reid Hunt, of the Harvard Medical School, disclaims any connection with this work, classing it with the other attempts to commercialize the vitamins. According to his suggestion, more would be gained by advising people to add bran to their cereals and drink milk.

DEMONSTRATION CLINIC AT THE BEVERLY HOSPITAL.

A demonstration clinical meeting was held at the Beverly Hospital, Tuesday, Nov. 21.

Dr. P. P. Johnson, chief of the Surgical Staff, showed the following cases: Abdominal pain, abscess left shoulder, intestinal obstruction, appendicitis with abscess and bone tuberculosis.

Dr. Buck of the Medical Staff spoke on renal function test and showed a case of abdominal pain with a question of acidosis.

Dr. Hopkins of Lynn and Dr. Pettingill of Essex Sanatorium discussed cases.

Doctors were present from Beverly, Danvers, Haverhill, Middleton, Hamilton, Lynn and Topsfield.

R. E. STONE,
Secretary of Staff.

MASSACHUSETTS ASSOCIATION OF ASSISTANT PHYSICIANS.

The 57th meeting of the Massachusetts Association of Assistant Physicians was held at the Boston State Hospital on Thursday, November 10, 1922, seventy-eight members and their wives being the guests of the superintendent, Dr. James V. May.

During the morning small parties were escorted through the institution by members of the staff and given the opportunity of seeing the many interesting features of the hospital.

The ladies of the party were entertained by the hostess, Mrs. E. C. Noble, while the meeting was in progress.

Following a very excellent luncheon, the meeting was called to order by the president, Dr. Ralph M. Chambers. Election of officers being in order, the following were selected for the new year:

President: Dr. Arthur E. Pattrell, Boston Psychopathic Hospital. Vice-President: Dr. Roderick P. Dexter, Taunton State Hospital. Secretary-Treasurer: Dr. N. A. Dayton, Wrentham State School.

In opening the program, the Assistant Superintendent, Dr. E. C. Noble, sketched the development of Occupational Therapy at the Boston State Hospital over a period of years. In so doing, he stressed the importance of an agreeable personality in the workers in this department. Too often Dr. Noble has seen highly trained workers prove complete failures simply because they were unable to gain the confidence of their patients sufficiently to stimulate their interest. Once the importance of this factor was recognized and the need supplied, the department of Occupational Therapy developed at a rate formerly thought impossible.

Dr. E. W. Pease presented a paper dealing with recoveries and remissions in General Paralysis of the Insane without treatment. After summarizing the literature of this particular phase of the disorder, he presented a case with several very interesting features. A man of 41 was admitted with all the classical symptoms of a mentally unbalanced parietic, including positive blood and spinal fluid. A few months after admission, he had a very severe streptococcus infection of one foot. While recovering from this, he began to show gradual improvement in both psychical and physical spheres. The patient became much quieter, judgment and thought processes were improved, and he developed insight. Greatly increased interest in environment and an eighteen-pound gain in weight were observed. Neurological findings remained unchanged. Steady improvement over a two-year period resulted in the man leaving the hospital and obtaining work as a janitor, in which occupation he has remained for the past eight years. When the patient left the hospital, his blood and spinal fluid were negative, the cell count and gold curve presenting only slight deviation from normal. Discussion by Drs. Hanson, Noble, Chambers, Overholser and Pease.

An unusual case of Traumatic Psychosis with Epilepsy was presented by Dr. R. B. Dexter. At the age of forty-three the patient met with an accident, fracturing skull in the upper frontal region. Decompression revealed injury of both tables of skull and the brain lacerated and dirty. Over the following two years the patient showed gradual mental deterioration, being obliged to accept lower positions and finally being discharged. With negative family

and personal histories epilepsy developed at fifty-three, or ten years after the primary injury, and within a short period the attacks were very typically those of grand mal. Seventeen years after injury, or at the age of sixty, the psychosis appeared, somatic delusions and varied persecutory ideas holding the foreground. Following admission for the mental disturbance, roentgenograms showed erosion at seat of injury and a second operation was done by Dr. Irving P. Walker. The patient was greatly improved for three months, but at the end of that time the seizures and psychotic episodes reappeared, and have continued up to the present. Discussion by Drs. Wood, Noble and Dexter. Meeting adjourned.

NEIL A. DAYTON, M.D., *Secretary*,
Wrentham State School.

TRIBUTE

TO MRS. ELIZABETH J. COLLINS.

BY JOHN W. FARLOW, LIBRARIAN, BOSTON MEDICAL LIBRARY.

At a meeting of the Executive Committee of the Boston Medical Library on October 16, 1922, the following resolutions were passed:

"In the death of Mrs. Elizabeth J. Collins, the Library loses its faithful Cataloguer for forty-two years. Her untiring devotion to the cause of medical literature, with its difficult questions of classification and cataloguing, has been of the greatest value to the medical profession; and the Executive Committee wishes to record its appreciation of the important part that she took in the growth of the Library from its small beginnings in 1880 to its present influence in the community."

Mrs. Collins was born in Boston, October 16, 1850, and died there September 1, 1922. She was obliged to leave school at the age of fourteen, on account of the death of her father. A year later, she obtained a position in the Boston Public Library, where she remained until her marriage to Mr. Thomas Collins in 1876, returning to the library after his death in 1879.

She received a thorough training under Mr. Justin Winsor the librarian, who assigned to her the task of looking after the medical section, especially the books received from the Massachusetts Medical Society in 1873. The proper methods of classifying medical literature were little understood until the publication of the *Index Medicus* and the *Index Catalogue* of the Surgeon-General's Library under the direction of Dr. J. S. Billings in 1880. The knowledge of medical periodicals, especially the *American*, was very limited, and Mrs. Collins, a pioneer in Boston in medical cataloguing, had little to guide her up to that time. Fortunately, she saw more or less of Dr. J. R. Chadwick,

librarian of the recently started Boston Medical Library, who came to the Public Library to talk with Mr. Winsor and, incidentally, to try to get from him material for the young medical library. Seeing her keen interest in this work, and noting her great perseverance, Dr. Chadwick induced her to give part of her time to helping him at the Medical Library; and what was also most important, he induced Dr. Calvin Ellis to pay for her services, there being no money available in the treasury of the library. She gradually gave more and more time to helping Dr. Chadwick, and in 1881, when she was established at the Medical Library in a definite position as cataloguer, he referred to her as "specially qualified for her work by many years of similar service at the Public Library."

When she was in difficulty, she consulted Dr. Chadwick, and through him Dr. Billings. Although the first volume of the *Index Catalogue* came out in 1880, it was many years before the entire series was published. Through the friendship of Dr. Chadwick and Dr. Billings, it was often possible to receive advance information from Washington as to books and periodicals which had not yet been described in the *Index Catalogue*.

In 1906 the medical collections of the Public Library, about 11,000 in number, including those that came from the Massachusetts Medical Society in 1873, were deposited in the Medical Library, the very books that Mrs. Collins had worked over in the Public Library. The regular library hours were not long enough for her, and she generally carried home at night packages of cards, lists of books and references, over which she spent her evening hours in order to get on with her ever-expanding task. This assiduous work she continued for forty-two years, with an industry and conscientiousness that never flagged. Even in her last year or more of broken health she thought only of the library, and continued to the very end to give to it the best of which she was capable.

The Boston Medical Library and the medical profession owe her a debt of gratitude for her lifelong devotion to the best interests of medical literature.

Miscellany.

THE ANNUAL MEETING OF THE NATIONAL COMMITTEE FOR MENTAL HYGIENE, INC.

The 13th Annual Meeting and Luncheon of the National Committee for Mental Hygiene was held at the Pennsylvania Hotel in New York on November 9th. Addresses were made by Dr. Haven Emerson, Professor Stephen P. Duggan, Mr. John J. Carty of New York, Professor Elton Mayo of the University of

Queensland, Australia, and Dr. Frankwood E. Williams, Medical Director of the National Committee.

Dr. Emerson spoke on the importance of the mental hygiene movement as a public health factor and asked for the support of those who have hitherto subscribed to the movements against infant mortality, tuberculosis and the other infectious diseases. He also pleaded for the wider education of physicians in mental diseases, after showing that more lay people were acquainted with the subject than doctors.

Dr. Walter B. James of New York was re-elected President of the Committee. Other officers elected were Dr. Charles W. Eliot, Dr. Bernard Sachs, and Dr. William H. Welch, Vice-Presidents; Mr. Otto T. Bannard, Treasurer; and Mr. Clifford W. Beers, Secretary.

Among those re-elected to membership were: Dr. Lewellys F. Barker and Dr. J. M. T. Finney of Maryland; Dr. Frank Billings of Illinois; Dr. George W. Crile of Ohio; Dr. L. Emmet Holt, Dr. John H. Finley, Mr. John J. Carty and Judge Learned Hand of New York; and Dr. Harvey Cushing, Dean Roscoe Pound, Dr. Anson Phelps Stokes, Dr. Joel E. Goldthwait, Dr. Austen Fox Riggs, President William A. Neilson and Dr. Henry R. Stedman of Massachusetts. Among the new members elected were Dr. Frederick C. Shattuck and Hon. Herbert C. Parsons of Boston.

OBSERVANCE OF AMERICAN EDUCATION WEEK.

Two years ago Dr. P. P. Claxton, former Commissioner of Education, instituted the observance of the first week in December as "Education Week." The American Legion last year became interested in the perpetuation of such a week and took the initiative in inviting the National Education Association and other organizations to coöperate in the observance of "American Education Week." This year the United States Bureau of Education in coöperating with the American Legion and the National Education Association in inviting every American organization, club, church, school, newspaper, magazine, theatre and individual and bodies of every description to participate in making the week, December 3-9, a real nationwide revival of educational enthusiasm.

It seemed wise, in order that the campaign might be concentrated upon phases of education which are of outstanding significance, to designate certain days on which topics should be stressed. These days are as follows: Sunday, December 3, God and Country; Monday, December 4, American Citizenship; Tuesday, December 5, Patriotism; Wednesday, December 6, School and Teacher; Thursday, December 7, Literacy; Friday, December 8, Equality of

Opportunity; and Saturday, December 9, Physical Education and Hygiene.

The placing of Physical Education and Hygiene at the bottom of the list may not indicate a lack of appreciation of the importance of this department of education but the result may be that less interest will be created. "God and Country" and "American Citizenship" could have been combined in one exercise and Monday, Dec. 4, have been given to "Physical Education and Hygiene." The promotion of health and physical efficiency is a fundamental condition affecting a country's progress and should occupy a most prominent place in an educational program.

Correspondence.

LONDON LETTER

(From our own Correspondent)

London, Nov. 11, 1922.

THE RISE AND FALL OF SURGICAL OPERATIONS.—Mr. James Berry, the well known London surgeon, on the evening of Nov. 1, gave an address as President of the Section of Surgery of the Royal Society of Medicine, at the home of the Society, 1, Wimpole Street, London, W. Mr. Berry as a student witnessed the last of the pre-antiseptic days, and had watched the development, first of antiseptic surgery and later the gradual development of the aseptic régime, under which so many of the greatest advances of modern surgery have been made. In the eighties operative surgery of the skull and brain was in its infancy. Mr. Berry pointed out that now experience and skill were especially essential in brain surgery. An operation on the brain which might be a brilliant success in the hands of a Harvey Cushing or a Sergeant might prove a terrible disaster when performed by a man with inadequate skill or insufficient experience. It was a truism to state that most of the progress made in surgery was due to the application first of antiseptic and later of aseptic principles. He could recall the days when eminent surgeons operated in old frock coats, splashed with blood and besmeared with pus. Indeed the more dirty the coat, the greater seemed to be the pride of the surgeon who wore it. The surgeon of those times did not trouble to wash his hands before an operation and Mr. Berry has actually seen a surgeon bite a ligature. He emphasized the point that it is of equal importance to know when to operate and how to operate and in support of this statement quoted a saying of a very great French surgeon: "I can teach my assistants to operate in the space of six months, but it takes twenty years of experience to know when to operate."

Perhaps, however, the special features of the address were those parts dealing with the results of operations for appendicitis and the tendency brought about by the war, of inexperienced men operating for the relief of serious conditions. Mr. Berry's remarks on the surgery of appendicitis should be of particular interest to New England and Boston medical readers, on account of the fact that appendicitis was in a manner of speaking discovered in Boston. Fifteen years ago he had expressed the opinion in the *Lancet*, Sept. 7, 1907, that if we were to all go back to the old treatment of appendicitis that was in vogue 25, now 40 years ago, that there would be a lesser mortality than there is at present. Fifteen years of further experience had confirmed him in this view. Of course, he did not suggest that the experienced surgeon should not operate for acute appendi-

itis, or even that there were not many cases in which immediate operation was not necessary. But he did think that much more care should be taken in the selection of cases for operation as regards both time and manner. It was the common belief of the public and the profession that the custom of operating freely for acute appendicitis had resulted in a great saving of life. In that case deaths from appendicitis should be less common than they used to be, unless one held the view, as some boldly do, that appendicitis was a disease that was becoming increasingly frequent, and there was no clear evidence of this. Various tables, referring to appendicitis, gastric ulcer, intestinal obstruction and peritonitis, compiled from the Registrar General's returns for England and Wales, extending over a period of twenty years, were exhibited and these seemed to show, so far as statistics can show, that deaths from appendicitis have in fact increased. Mr. Berry admitted that figures were often misleading although he did not go so far as the late Professor Black of Glasgow, who said that "statistics," like sausages, "depended a good deal upon the old woman who made them." But he thought that the figures he exhibited, if they meant anything, tended, at least, to show that the mortality from appendicitis has not diminished since the custom of operating for acute appendicitis has been so widely prevalent.

Mr. Berry held that the war had advanced surgery in some respects but in others had exerted a harmful effect. Nowadays many dangerous operations were being undertaken by men whose qualifications consisted of a few years' practice in military surgery, but such surgery has rarely occurred in civil practice. He pointed out that this kind of limited experience by no means qualified a surgeon to operate for serious conditions which occurred in civilian surgery and which called for a considerable amount of skill and experience. But country practitioners in all parts of Great Britain felt themselves competent to operate in cases of this description. Seeing that a skilled and well trained surgeon was available in nearly every large town in Great Britain, Mr. Berry thought it obviously unwise for the medical practitioner without much experience to run the risk of undertaking extensive operations except in cases of great urgency. Mr. Berry's definition of a "good surgeon" is one who always knows when to put in and when to take out a drainage tube.

THE CAUSATION AND PATHOGENESIS OF RICKETS.—Another presidential address of exceptional interest which has been given recently in the building of the Royal Society of Medicine in London, was that of Dr. Eric Pritchard, as President of the Children's Section, on Oct. 27, last. Perhaps there is no disease which is giving rise to such diverse views among those who have made a special study of the subject, with regard to causation, treatment and so on, as rickets. Perhaps, the most prevalent view at the present time is that it is a condition brought about by faulty hygiene, a disease of environment in fact. In Great Britain, Professor Noel Paton and Dr. Leonard Findlay of Glasgow are the chief upholders of this theory. Not long ago, the view mainly held as to its causation was the deficiency of the fat-soluble A vitamin and it was almost classed with the deficiency diseases on that account. Dr. Eric Pritchard is of the eminently common-sense opinion that the condition is not due to one cause but to several. He said in his address that he had chosen the subject of rickets for two particular reasons. 1. He had devoted more attention to it than to any other in medicine. 2. He regarded it as the most widely spread disease in the whole domain of pediatrics. He pointed out that lack of sunshine and want of fat had long been recognized as causes of rickets, nor was the vitamin theory new except in name. It may be mentioned here that Dr. Pritchard has pub-

lished recently the fourth edition of his book, "The Physiological Feeding of Infants and Children" in which the question of rickets is dealt with at length. In his address he drew attention to the fact that all conditions of malnutrition in infants, bad nutrition, bad hygiene, etc., must lead to rickets, because they all conduce to the development of acidosis and consequently to mineral depletion and calcium impoverishment. Rickets is an outcome of acidosis. In all conditions leading to rickets there is an excessive production of acid bodies in the system; that these acid bodies must be found in excess if the amount of food exceeds the physiological requirements. According to Pritchard the more usual contributing etiological factors are: chronic infections, vitamin stagnation, such as fat, soluble A and anti-scorbutics, metabolic disturbances, endocrine defects, such as adrenal, thyroid and pituitary insufficiency depressants. It was further pointed out that calcium depletion had three very obvious defects: 1. want of mineralization of bone; 2. muscular weakness; 3. nervous irritability. The successful prophylactic treatment of rickets is the same as that of acidosis, and the curative treatment is identical. Dr. Pritchard in concluding laid stress on the point that there is no one cause of rickets, the causes are multiple.

SMALLPOX IN LONDON.—There is an outbreak of smallpox in London, although at present, at any rate, it is mainly confined to one district. The Ministry of Health urge emphatically the desirability of vaccination. Sir George Newman, the chief medical officer of the Ministry, said a short time ago that for the whole of England and Wales only 40 per cent. of the babies born are being vaccinated, and it is his duty to say quite explicitly that this condition of things brings with it, in greater or less degree, an increased risk of smallpox to the nation as a whole. It is satisfactory to state that there has been somewhat of a rush to be vaccinated. A rather interesting incident in connection with the outbreak is that a considerable amount of insurance has been placed at Lloyd's against the risk of contracting smallpox, policies paying a total loss in the event of the insured person contracting the disease. The rates demanded are one shilling (25 cents) per cent. if the insured person had been vaccinated within the past ten years, and two shillings (50 cents) per cent. otherwise. Representation in the Royal College of Surgeons.—At the forthcoming annual meeting of the Fellows and Members of the Royal College of Surgeons to be held on November 16, a resolution is to be proposed "again affirming the desirability of admitting members to direct representation on the Council of the College which, as now constituted, only represents those members 'who hold the Fellowship.'" The resolution adds that as the college is composed of about 18,000 persons, of whom 16,000 are engaged in general practice, "that the President and Council should nominate at least two members in general practice to represent the interests of general practitioners on the Council."

TOUR FOR MEMBERS ATTENDING THE ANNUAL MEETING OF THE A. M. A.

New York, Nov. 14, 1922.

Dr. W. L. Burrage, Secretary Massachusetts Medical Society, 42 Elliot Street, Jamaica Plain, Boston, Mass.

My dear Dr. Burrage:

We are planning a tour for the members of the Medical Society of the State of New York and their friends to the A. M. A. meeting next June in San Francisco.

Our President, Dr. Arthur W. Booth, has suggested that we place our plans in the hands of all the delegates to the A. M. A., and the State Secretaries from the Eastern States.

We will therefore appreciate your sending us the names and addresses of the County Secretaries and the delegates to the A. M. A. convention from your State Society, so we may be in a position to send them particulars regarding this trip.

Kindly give this as much publicity as possible among your friends.

We expect to give a better trip at lower cost than will be possible to those traveling alone.

Thanking you in anticipation of your complying with our request, we remain,

Yours truly,

MALCOLM C. ROSE, Chairman.

152 W. 42nd Street at Broadway, Times Square.

[NOTE.—Dr. Burrage has given the desired information.]

RECENT DEATHS.

DR. ALBERT HENRY BUCK, who was clinical professor of diseases of the ear at the College of Physicians and Surgeons, New York, from 1888 to 1904, and for many years one of the leading aurists of the city, died November 16, 1922, in his eighty-first year at his home in Cornwall, N. Y. He graduated from Yale in 1864 and finished his medical education in Europe and at the College of Physicians and Surgeons at Columbia in 1867. He was editor of *Hygiene and Public Health* in 1879, founded and edited the first two editions of the *Reference Handbook of the Medical Sciences*, was co-editor of *American Practice of Surgery* and author of "Diseases of the Ear."

He is survived by a wife, formerly Laura S. Abbott, whom he married in 1871.

DR. WILDER PRAY SAFFORD died at Brockton, November 16, 1922, at the age of sixty-seven.

He was born in Boston, February 20, 1855, was graduated from Dartmouth Medical School in the class of 1892, studied medicine further in the New York University Medical College, and settled in New York City.

He came to Brockton and joined the Massachusetts Medical Society in 1904, conducting a private lying-in hospital at No. 52 Pleasant Street. This building was recently taken by the city as the site for a fire apparatus station and the doctor was forced to move, against his wishes.

He is survived by his widow, a sister, and a nephew.

DR. GEORGE WILLIAM DOW, medical examiner of the 5th Essex District since 1900, died at his home in Lawrence of heart disease, November 21, 1922, at the age of 71. He was a member of the Staff of the Lawrence General Hospital and had been alderman and city physician. He was a Brown graduate (1877) and Harvard Medical (1881). He was M. M. S. His widow and a son survive him.

DR. FRANK HUNTER ZABRISKIE died at Greenfield, Oct. 23, 1922, aged 63. He was a member of the American Medical Association and of the Massachusetts Medical Society.

BOOKS RECEIVED FOR REVIEW.

The JOURNAL acknowledges the receipt of the following books for review:—

De Arte Physicali et de Chirurgia of Master John Arderne, Surgeon of Newcastle. Dated 1412. By SIR D'ANCY POWER. Published by William Wood & Co., New York. 80 pages. Price \$4.

The Rockefeller Foundation—Annual Report—1921. 446 pages. Privately printed.

The Treatment of Fractures. By CHARLES LOCKE

SCUDDER. Published by W. B. Saunders Co. Ninth revised edition. 749 pages. 1252 illustrations. Price \$8.50.

A Manual of Pharmacology, 2nd Edition. By TORALD SOLLMAHN. 1006 pages. Published by W. B. Saunders Co.; Philadelphia and London. Price \$7.

An Outline of the Pirquet System of Nutrition. By CLEMENS PIQUET. Philadelphia and London: W. B. Saunders Co. 96 pages. Price \$2.

The Evolution of Public Health Nursing. By ANNIE M. BRAINARD. Philadelphia and London: W. B. Saunders Co. 454 pages. Price \$3.

Lectures on Dietetics. By MAX EINHORN. Published by W. B. Saunders Co.; Philadelphia and London. 244 pages. Price \$2.25.

Bibliography of Hookworm Disease—Publication No. 11. Published by the Rockefeller Foundation. International Health Board, New York City.

Lateral Curvature of the Spine and Round Shoulders. By ROBERT W. LOVETT. Published by P. Blakiston's Son & Co., Philadelphia. 217 pages. Price \$2.50.

Clinical Medicine. 1. Tuesday Clinics at the Johns Hopkins Hospital. By LEWELLYS F. BARKER. 617 pages. Philadelphia and London: W. B. Saunders Co. Price \$7.

Animal Parasites and Human Diseases. By ASA C. CHANDLER. Published by John Wiley and Sons, Inc., New York. Chapman & Hall, Ltd., London. 572 pages. Price \$4.50.

Diseases of Women. By HARRY STURGEON CROSSEN. 1005 pages. St. Louis: C. V. Mosby Co. Price \$10.

Injury, Recovery, and Death in Relation to Conductivity and Permeability. By W. J. V. OSTERHOUT. 259 pages. Philadelphia and London: J. B. Lippincott Co. Price \$2.50.

Rickets. By J. LAWSON DICK. 484 pages. New York: E. R. Treat and Co. Price \$5.50.

Gonorrhea and Impotency. Modern Treatment. By EDWIN W. HIRSCH. 172 pages. Chicago: The Solar Press. Price \$3.50.

Bronchoscopy and Esophagoscopy. A Manual of Peroral Endoscopy and Laryngeal Surgery. By CHEVALIER JACKSON. 346 pages. Philadelphia and London: W. B. Saunders Co. Price \$5.50.

Chloroform Anæsthesia. By A. GOODMAN LEVY. 159 pages. New York: William Wood & Co. Price \$2.25.

Aids to Tropical Hygiene. By COLONEL R. J. BLAKHAM. 240 pages. New York: Wm. Wood & Co. Price \$1.75.

Miracles and the New Psychology. A Study in the Healing Miracles of the New Testament. By E. R. MICKLEM. 142 pages. New York and London: Oxford University Press. Price \$2.50.

Public Relief of Sickness. By GERALD MORGAN. 195 pages. New York: The Macmillan Co. Price \$1.50.

Brain Abscess, Its Surgical Pathology and Treatment. 297 pages. New York: The Macmillan Co. Price \$7.

Selected Works of Sydenham. By JOHN D. COURIE. Published by William Wood & Co., New York. 153 pages. Price \$3.

Polaris. The Story of an Eskimo Dog. By ERNEST HAROLD BAYNES. 137 pages. New York: Macmillan Co. Price \$1.50.

The Biology of Death. (Monographs of Experimental Biology.) By RAYMOND PEAR. 275 pages. Philadelphia and London: J. B. Lippincott Co. Price \$2.50.

NEW ENGLAND DERMATOLOGICAL SOCIETY.

The regular quarterly meeting of the New England Dermatological Society will be held at the Boston City Hospital, in the Surgical Amphitheatre, on De-

cember 13, 1922, at three thirty p.m. All physicians who are interested are invited to attend.

SPECIAL MEETING TO DEMONSTRATE THE SCHICK TEST.

All physicians doubtless know something about the Schick test, but do they know enough? The value of the test in practice depends upon its application in the right way and above all on correct reading of the results. It is necessary to distinguish four kinds of results: namely, the negative reaction, the simple positive reaction, the pseudo-reaction, and the positive combined reaction, which is a combination of pseudo and positive reactions. To learn to differentiate these reactions is relatively easy when typical examples of each have once been seen.

The Norfolk District Medical Society recently held a special meeting at which demonstrations of the test were given and the meeting was well attended. The Suffolk District Medical Society now plans to hold a similar special meeting on December 5th.

At this meeting specially qualified speakers will discuss briefly the public health aspect, the practitioner's viewpoint, and the immunological principles of the test.

The technique of performing the test will be demonstrated and the various kinds of reactions will be illustrated by actual cases. Physicians who have not yet familiarized themselves with these matters will, it is hoped, take this opportunity so to do. Even though they might not contemplate performing the test themselves, they would then be better prepared to second the health authorities in their efforts to eliminate diphtheria.

THE WORCESTER DISTRICT MEDICAL SOCIETY.

Dr. A. Wilson Atwood has issued the following tentative programme for the rest of the year:

December 13, 1922.—The meeting will be held in the G. A. R. Hall, Pearl Street. Programme: "Prostatectomy," Dr. J. D. Barney of Boston; "Anomalies of the Kidney," Dr. Walter D. Bieberback; "A Series of Interesting Pyelograms in Genito-Urinary Lesions," Dr. Philip H. Cook.

January 10, 1923.—The meeting will be held at the Worcester State Hospital, Belmont Street, at 4.15 P. M. Programme: "A Discussion of Status Thymico-Lymphaticus and the Inherent Compensatory Possibilities," Dr. Walter Timme, New York City. Discussion will be opened by Dr. W. A. Bryan.

February 14, 1923.—The meeting will be held at the Worcester City Hospital at 4.15 P. M. The programme will consist of a series of papers by members of the staff.

March 14, 1923.—The meeting will be held at St. Vincent's Hospital at 8.15 P. M. The programme will consist of a series of papers by members of the staff.

April 11, 1923.—The meeting will be held at Memorial Hospital at 8.15 P. M. and the programme will consist of a series of papers by members of the staff.

May 9, 1923.—Annual meeting and banquet.

Approximately 75 patients visited the special cancer clinics at the Worcester hospitals as the result of the publicity given to the matter by the last public meeting of the Society and the splendid work of the press.

SOCIETY MEETINGS.

DISTRICT SOCIETIES.

A list of society meetings is herewith published. This list will be changed on information furnished by the secretaries of the societies, and will appear in each issue.

Barnstable District:—Hyannis,—February 2, 1923, (Annual Meeting)—May 4, 1923.

Bristol South District:—Fall River,—May 8, 1923.

Essex North District:—Haverhill, (Semi-Annual Meeting)—January 3, 1923. Y. M. C. A. Building, Lawrence, (Annual Meeting)—May 2, 1923.

Essex South District Medical Society meets Wednesday, December 13th, at Beverly Hospital, Beverly, 6 p.m. Speakers: Dr. W. P. Bowers, Managing Editor *Boston Medical and Surgical Journal*; Dr. John D. Adams, Boston; Dr. P. P. Johnson, Beverly. R. E. Stone, Secretary.

Suffolk District:—December 27, 1922; January 31, 1923; February 28, 1923; March 28, 1923; Annual Meeting, April 23, 1923.

The Springfield Academy of Medicine meets the second Tuesday of each month. Schedule of speakers includes the following names: Dr. Alexis Carrel, Dr. W. B. Long, Dr. J. W. Williams, Dr. W. S. Thayer, and Dr. Barton Cooke, Hist. The date for each speaker has not been assigned.

Middlesex North District:—Meeting, Wednesday, January 31, 1923.

Middlesex East District:—Jan. 24, 1923. The Nursing Problem. Speaker to be announced later.

March 21, 1923. Mental Factors in Childhood. Paper by Dr. William Healy.

April 18, 1923. Interpretation of Laboratory Findings. Papers by Dr. E. G. Crabtree and one to be announced later.

May 9, 1923. Annual Meeting.

All meetings except the annual meeting will be held at the Harvard Club in Boston. A. E. Small, Secretary.

Worcester District meetings in Worcester, Dec. 13, 1922, Jan. 10, Feb. 14, March 14, April 11 and May 9, 1923, the last named date being the annual meeting.

STATE, INTERSTATE AND NATIONAL SOCIETIES.

December, 1922:—New England Dermatological Society Meeting, Wednesday, December 13, 1922, at 3.30 p. m., in the Surgical Amphitheatre, Boston City Hospital; C. Guy Lane, Secretary.

December 26-30, 1922:—American Association for Advancement of Science meets in Boston.

December, 1922:—Boston Medical History Club will meet December 18, 1922.

January, 1923:—Massachusetts Society of Examining Physicians (date and place undecided); Hilbert F. Day, Secretary. Massachusetts Association of Boards of Health, January 23, Annual Meeting, Boston; W. H. Allen, Mansfield, Mass., Secretary.

January, 1923:—Boston Association of Cardiac Clinics. Meeting January 18, 1923, at 8.15 p.m. Boston Lying-In Hospital (New Hospital). Subject: Pregnancy and Heart Disease.

January, 1923:—Boston Medical History Club will meet January 15, 1923.

February, 1923:—New England Dermatological Society Meeting, February 14, 1923, at 3.30 p. m., in the Skin Out-Patient Department, Massachusetts General Hospital; C. Guy Lane, Secretary.

February, 1923:—Boston Medical History Club will meet the third Monday of this month.

March, 1923:—Massachusetts Society of Examining Physicians (date and place undecided); Hilbert F. Day, Secretary.

March, 1923:—Boston Association of Cardiac Clinics. Meeting March 15, 1923, at 8.15 p.m. Boston City Hospital. Subject: Prevention and Relief of Heart Failure.

March, 1923:—Boston Medical History Club will meet the third Monday of this month.

April, 1923:—New England Dermatological Society Meeting, April 11, 1923, at 3.30 p. m., in the Surgical Amphitheatre, Boston City Hospital; C. Guy Lane, Secretary. Massachusetts Association of Boards of Health, April 26, 1923, Boston; W. H. Allen, Mansfield, Mass., Secretary.

April, 1923:—Boston Medical History Club will meet the third Monday of this month.

May, 1923:—Massachusetts Society of Examining Physicians (date and place undecided). American Pediatric Society Meeting, May 31, June 1 and 2, 1923, at French Lick Springs Hotel, French Lick, Ind.; H. C. Carpenter, Secretary.

May, 1923:—Boston Association of Cardiac Clinics. Meeting May 17, 1923, at 8.15 p.m. Children's Hospital. Subject: Rheumatism and Chorea and Heart Disease.

June, 1923:—American Medical Association, San Francisco, June 25-29, 1923; Alexander R. Craig, Chicago, Ill., Secretary.

July, 1923:—Massachusetts Association of Boards of Health, July 26, Nantasket; W. H. Allen, Mansfield, Mass., Secretary.

*Deceased September 2, 1923.